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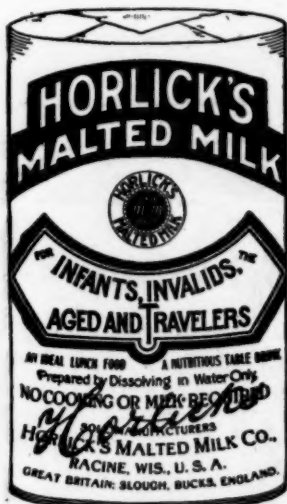
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## General Scientific

### POLIOMYELITIS AND POLIOENCEPHALITIS.

A Study of the Epidemic in the Summer of 1916, with Especial Reference to Early Symptoms, Diagnosis, and Intraspinal Serum Treatment.

LOUIS FISCHER, M. D.,

ATTENDING PHYSICIAN TO THE WILLARD PARKER HOSPITAL, ETC.  
New York.

The sudden appearance of infantile paralysis in Brooklyn and in New York during the past summer has been the subject of careful study and investigation. Scientists have busied themselves with one question—how did this disease originate? Why does the virus or germ assume such virulence in hot weather? Why do so many cases begin with symptoms resembling disordered stomach—gastric fever—and terminate in paralysis? How is it that the same symptoms in other years are not followed by paralysis?

The seriousness of the epidemic can be approximated when we consider that 2,074 out of 8,389 children affected died. It is difficult to gather accurate statistics regarding the number of cases affected and the number remaining paralyzed, because during the epidemic there were thousands of children suffering a slight indisposition, with a temperature no higher than 100 to 101 degrees, and these symptoms passed within 24 to 48 hours. These cases are of the abortive type and are very dangerous because they are not isolated but spread the disease wherever they go. As we cannot take cultures or smears from the throats, there is no means of determining by modern clinical or bacteriological methods whether or no the infection is extinct.

**Etiology.**—This disease is characterized by a sudden onset of fever, then paralysis usually followed by muscular atrophy and imperfect bone development, sometimes by deformity.

The recent studies of Flexner and Noguchi show that poliomyelitis is due to a distinct micro-organism which can be isolated from the human poliomyelitis virus. The micro-organism exists in the infected and diseased organs; it is not, as far as is known, a common saprophyte, or associated with any other pathological condition; it is capable of reproducing on inoculation the experimental disease in monkeys, from which ani-

mals it can be recovered in pure culture. Besides these classical requirements the micro-organism withstands preservation and glycerination as does the ordinary virus of poliomyelitis within the nervous organs. Finally, the anaerobic nature of the micro-organism interposes no obstacle to its acceptance as the causative agent, since the living tissues are devoid of free oxygen all the virus of poliomyelitis has not yet been detected in the circulation blood or cerebrospinal fluid of human beings, in which the oxygen is less firmly bound, nor need it, even should the micro-organism be found sometimes to survive in these fluids.

Mosquitoes, bugs and insects, especially the bottle-green fly, have been suspected of carrying the disease from infected areas. Milk, fruit and vegetables, especially vegetables eaten raw, and derived from sources unknown, should at least be regarded with suspicion.

The outbreak of so many cases in the Brooklyn district at the time of the building of the Bush terminal several years ago pointed to the subsoil as a possible place for harboring the micro-organisms, from which it could have been liberated. Hides and animal skins have been regarded with suspicion. Many of these are brought from countries in which this disease is prevalent.

The sudden appearance of this disease at the seashore, especially on Long Island, and Bay Ridge, Borough Park, the Rockaways and Coney Island on the south shore; at Sea Cliff, Glen Cove and other points on the north shore, points to the harboring of this infected agent in congested areas along the water front. On the Sound, at New Rochelle, Larchmont and Mt. Vernon, many cases developed among the congested sections and spread from there to the most isolated points, and in the most modern and sanitary homes.

In New York and Brooklyn 80 per cent. of cases occurred in the congested sections of the cities in which the working classes live.

In a great number of cases seen by me a slight error in diet, faulty feeding or an overloaded stomach was sufficient to cause an attack of gastric fever with vomiting, which frequently terminated in an attack of acute poliomyelitis. In this latter class of cases it looked as though infected food was the cause of the trouble. In many other cases rhinitis, with symptoms of cold in the

head, cough and fever, terminated in paralysis. In these cases one would presume the disease is air-borne.

**Early Manifestations.**—One of the earliest symptoms is fever, followed by vomiting, anorexia and a general sense of lassitude. The child will be peevish, extremely thirsty and will not care to play. He will show evidence of muscular pain and will cry on being touched. An older child will complain of headache, pain in the back of the neck and muscular pains or of pains in the joints. A general muscular tremor will be noted. Facial twitchings involving the eye and twitching of the abdominal muscles can be seen. During an epidemic of poliomyelitis it is important to watch for these twitchings and to have temperature taken daily, knowing as we do, that the onset of the disease is always accompanied by a rise of temperature.

In the abortive type the child may escape having high fever; the temperature may rise no higher than 102 degrees and gradually come down by lysis to normal. In the severer forms of the disease the temperature may rise to 104 or 105 degrees. The fever usually persists for from three to five days; however, I have seen the febrile stage extend from seven to fourteen days. In the severer forms we have a sudden rise of temperature ranging between 103 and 105 degrees, followed in from 48 to 72 hours by a sudden drop to normal, resembling the crisis in pneumonia. (See clinical fever chart, case of Dr. M. Magid, appended.)

**Symptoms.**—From a study of the epidemic prevailing during the summer of 1916 the following classification seems justifiable:

**1st. The Abortive Type.**—These are the cases responsible for the spread of the disease, for the large majority, owing to the mildness of their symptoms, are passed unnoticed. They may be termed the "carriers" of this infection.

The temperature may rise no higher than 101 degrees and last but one or two days. The child will be apathetic, complain of headache, and have extreme lassitude. He may also complain of pain in the arms and legs. In some forms of the abortive type the symptoms will pass after one day, the child will regain his appetite and be as bright as usual. The reflexes may be slightly exaggerated, but there are no other evidences of paralysis.

**2nd. Gastro-enteric Type.**—In this type we have vomiting, anorexia fever; temperature ranging between 100 and 104 degrees, extreme lassitude, pain on moving the arms and legs, pain in the back of the neck, headache, and a general apathetic condition. The sclera of both eyes show engorged blood vessels, the eyes stare or are fixed, the pupils respond slowly, the patellar reflexes are exaggerated or lost, and the child appears to be in a stupor, usually followed by paralysis.

**3rd. Respiratory Type.**—In the milder forms of this type we have symptoms resembling rhinitis, with fever ranging between 102 and 104 degrees, cough, peevishness, restlessness and general prostration.

In the severer forms we have symptoms resembling broncho-pneumonia, high fever, shallow, frequent respirations ranging between 50 and 80 per minute, pulse of 130 to 150 per minute, extreme lassitude, weakened or absent knee-jerk, and evidence of profound toxæmia. This type is usually fatal.

**The Bulbar Type.**—In the bulbar type we have inability to swallow or speak, marked rigidity of the sternocleido-mastoid, with intense pain in the head and neck, moaning usually preceded by convulsions, both

tonic and clonic in character. The muscular system of the arms and legs show intense rigidity. The Kernig sign is sometimes present and more frequently marked hyperextension of the big toe (Babinski) is noted. The pupils respond sluggishly and are usually contracted. All the symptoms of a meningitis such as *aâche cérébrale* and Brudzinsky's sign described elsewhere are present. In the early stage the patellar reflexes may be slightly present, but later are absent. The palntar reflex is usually present. The cremaster reflex slightly present. Paralysis usually takes place after the febrile condition subsides. The duration of the fever is from three to six days, although I have seen a case in which the fever persisted ten days.

**Preparalytic Symptom.**—During the febrile stage if the child is carefully observed we can frequently note an important symptom which has been described by Colliver (*Journal A. M. A.*, March 15, 1913) as a preparalytic symptom. It is a peculiar twitching, tremulous or convulsive movement. It usually affects a part or whole of one or more limbs, the face or jaw. It may also affect the whole body. In the beginning the symptoms may last less than one second, and may not recur oftener than every hour or so. Later the spells lengthen to a few seconds and recur at shorter intervals. The condition is sometimes accompanied by a peculiar cry, similar to the hydrocephalic. During the convulsive movement the child is apparently unconscious, with eyes set for a few seconds.

**Eruption.**—In many cases a pin-point erythema (scarletiform) scattered over the chest, abdomen and flexor surfaces of the arms and legs were seen. Sometimes the rash appears as urticarial blotches or wheals, principally on abdomen, back, thighs and arms. In these cases toxic, gastric or gastro-enteric symptoms exist. Another type of eruption seen is the morbiliform type. The eruption crescentic in character is found on face, neck, thorax and a few scattered areas are seen on the arms and legs. The eruption usually lasts from three to ten days and fades with the fever.

Lumbar puncture\* should be made to verify the diagnosis. Fifteen to 25 c.c. of spinal fluid should be withdrawn. If the fluid comes out under great pressure then 50 to 100 c.c. should be withdrawn. According to the findings of the Research Department of the New York Department of Health (Josephine Neal, *Archives of Pediatrics*, Aug. 1916) the spinal fluid of poliomyelitis is usually clear and increased in amount. The albumen and globulin are increased in varying degrees and there is usually a strong reduction of Febling's. The cellular increase ranges from slightly above normal to over 900 cells per cubic centimeter. Early in the disease the cells may be 50 per cent. or more mononuclear, later we usually find 70 to 90 per cent. or more mononuclears. There are frequently large mononuclear cells that seem somewhat characteristic of these fluids.

**Serum Treatment.**—Specific virtues exist in blood serum taken from a convalescent case of poliomyelitis. The presence of anti-bodies in such serum are of great value. No one who has seen and studied a case of poliomyelitis with its subsequent paralysis would refuse to try anything to modify or prevent paralysis which is likely to remain throughout life.

In a study of twenty-five cases seen in consultation with twenty-five physicians, all of whom recognized the gravity of the cases, every one recovered, with one exception—in the case of Dr. Waldman's patient. All

\*The technique and illustration of lumbar puncture is described on page 789, *Diseases of Infancy and Childhood*, Louis Fischer, (6th edition. F. A. Davis Co.)

of these cases received from 10 to 15 c.c. of human serum; in a few cases the injection was repeated. One advantage in the patient's favor was the fact that the cases were seen early in the disease, usually during the first three or four days, in some cases on the day of the onset of acute symptoms, others on the second, third and fourth days.

**Method Used.**—With the child in the dorsal position, knees flexed, head brought well forward to separate the laminae of the vertebrae, an area around the fourth and fifth lumbar vertebrae was cleansed with soap and water, then tincture of iodine applied. With the aid of a sterile needle the spinal canal was punctured and 15 to 30 c.c. of fluid withdrawn. When the fluid was found to spurt under great pressure, 45 to 60 c.c. were withdrawn. Through the same needle 10 to 15 c.c. of the human serum should be injected by the gravity method. One injection of serum is usually sufficient, although a second and third injection may be given in twenty-four hour intervals if no improvement is noted.

**Reaction.**—A severe febrile reaction occasionally follows the intraspinal injection of human serum. In some instances nausea and vomiting followed. Opisthotonus is occasionally noted soon after the injection and gradually disappears as the serum is absorbed.

**Intraspinal Saline Irrigation.**—I have used intraspinal irrigations of normal saline solution at a temperature of 105 to 106 degrees in a series of cases with excellent result. Several moribund cases responded promptly to this treatment. As much as possible of the spinal fluid is withdrawn, 30 to 100 c.c. have been withdrawn at one time. Thirty c.c. of the normal saline solution is injected through the same needle. After draining, another 30 c.c. of the saline solution is injected. This is repeated three times. After the third drainage, 15 c.c. of human serum is injected, the needle withdrawn, the puncture sealed with a drop of collodion or medicated adhesive plaster.

In cases of the bulbar type, with extreme prostration and coma, where it was impossible to feed by mouth, I have used injections of warm saline solution, 250 c.c., every four to six hours by hypodermoclysis. In one case of coma with inability to swallow, the child received 250 c.c. of saline solution in the loose cellular tissue of the abdomen with excellent result. Hot saline colonic flushings or the Murphy drip at a temperature of 110 to 115 degrees were given to supplement the hypodermoclysis.

Muscular rigidity accompanied by pain is best relieved by warm sulphur baths. The crude sulphuret of potassium, 4 ounces to a tub bath at a temperature of 103 degrees, will frequently relax the body and promote sleep. In some cases it will be found necessary to prolong the bath 15 to 20 minutes to produce an effect. These baths should be given morning and evening for at least one week.

The intraspinal serum treatment does not contraindicate the internal administration of 3 to 5 grains of chloral hydrate when necessary to induce sleep. It may be repeated every two hours until effectual.

The following series of cases will give a general idea of the types of the disease met with. It is interesting to note that in all cases there was a sudden onset of symptoms. Thus one of my cases, an apparently healthy child, complained of headache during the morning, had fever by noon, and three hours later was in a coma and showed distinct evidence of poliomyelitis. In the bulbar type a spasm with marked cyanosis followed the ad-

ministration of a teaspoonful of water. The child appeared to suffocate. These symptoms recurred whenever an attempt to swallow was made. In this class of cases, therefore, the administration of food or medication by mouth is contraindicated. Rectal alimentation or subcutaneous nutrition must be substituted.

**CASE I.** Samuel W., 4 years old, as seen with Dr. E. L. Friedman. The father is a physician and attended many cases of poliomyelitis. The child was ill three days when seen by me. The temperature on the first day was 101.5, the second day 105 and the third day 105 degrees. The child had vomited and showed signs of gastric disturbance due, the mother thought, to eating too much candy. The child lived near a tent colony at Rockaway Beach. The attending physician noted a decidedly swaying, unsteady gait, the patellar reflexes were exaggerated, plantar reflex present, cremaster reflex could not be elicited. There was a strong Kernig reaction, the Babinski (hyperextension of the big toe) was present, sternocleidomastoid rigidity, the Brudzinsky's sign was absent. There was a Tache cerebrale, and marked irritability and hyperesthesia of the skin. The pupils responded sluggishly, the throat was congested. The clinical diagnosis was poliomyelitis. By lumbar puncture I aspirated 25 c.c. of a slightly turbid fluid under moderate pressure. This fluid was examined by Dr. Neal of the Research Laboratory of the Department of Health, who found the mononuclears increased, albumen ++ globulin ++ Fehling's reduction test +++. After withdrawing the spinal fluid, I immediately injected 15 c.c. of convalescent human serum. The temperature on the following day was reduced to 102 degrees, and two days later reached normal. The child made a complete recovery.

**CASE II.** Marcel G., 4½ years old, was seen at the request of Dr. A. Mayer in consultation with Dr. Kenworthy, the health officer at Milford, Pa. There was a history of gastric disturbance, temperature 104 degrees, pulse 138, respiration 26, vomiting, foul breath, coated tongue, pharynx reddened, cervical glands enlarged, acetone odor, distended abdomen, foul mucus stools, patellar reflex present, not exaggerated, plantar reflex present. There was no tenderness over the appendix. Examination of the urine showed a large amount of acetone present, a trace of albumen and diacetic acid. There was a history of the child being ill one week. A ferruncle was incised several days ago on the right side of the head by Dr. Kenworthy. There were no symptoms which justified the diagnosis of poliomyelitis, and accordingly a diagnosis of acidosis was made. On the following day abdominal symptoms still prevailed and so alarmed the attending physician that a diagnosis of appendicitis was made. A surgeon was called and it was decided in view of the presence of the epidemic not to operate until a lumbar puncture had been made. The spinal fluid showed a large increase of mononuclears. The child had convulsions and sank into a stupor. Dr. H. Schwarz diagnosed the case as poliomyelitis.

When seen by me two days later with Drs. Mayer, Denzer and Adams, all of New York, the child was in a moribund condition. The prognosis was fatal. A lumbar puncture was made by me, 25 c.c. of spinal fluid aspirated, and 15 c.c. of convalescent human serum injected intraspinally.\* Warm saline injections were given by hypodermoclysis. Rectal alimentation was given. Two days after the spinal injection of serum was given there was a gradual return to consciousness and a slow, steady convalescence ensued.

**CASE III.** Lilly R., 5 years old, was seen with Dr. D. P. Waldman; had pertussis one month ago. She was a frail, debilitated child living in a congested district of Harlem. The child complained of headache, pain in the back of neck and in the feet. There were rigid sternocleidomastoids, a slight patellar reflex, plantar reflex present, marked hyperesthesia, temperature 100.6 degrees at 9 P.M., marked acetone odor to the breath, opisthotonus, pupils dilated, responded sluggishly, had dysphagia. When given a drink of water had a spasm and almost choked. The preparalytic symptom of twitching of the face, lip and forehead was very marked. Twenty-five c.c. spinal fluid, slightly turbid, was withdrawn under low pressure. Ten c.c. convalescent human serum were injected. Diagnosis: Poliomyelitis, bulbar type. Prognosis: Fatal. During the night and following day there were constant recurring convulsions. Child died fifteen hours later.

**CASE IV.** Herbert A., 4 years old, was seen with Dr. M. Magid. There was a history of gastric disturbance, temperature ranging as high as 103 degrees, extreme lassitude, pain in the back of neck, no pain in the limbs. There was a strong Kernig reaction, marked hyperesthesia, patellar reflexes barely perceptible, and acetone odor to the breath. Lumbar puncture

\*I am indebted to Dr. Olinsky of Mt. Sinai Hospital for the human serum used.



## A FURTHER STUDY OF THE COMPARATIVE RESULTS OF THE WASSERMANN TEST.

A. A. UHLE, M.D., and W. H. MACKINNEY, M. D.,  
Philadelphia.

In a recent communication a distinguished internist after enumerating a number of conditions in which syphilis might coexist or be an etiologic factor takes as his diagnostic aphorism, "When in doubt have a Wassermann test made; when not in doubt have a Wassermann test made."

With the exception of frambesia and leprosy this test is regarded by many as specific for syphilis. The value of the test is such that at present every well equipped hospital provides facilities for its performance, and many institutions include the Wassermann among routine examinations. As a result of the routine application of this test, statistics have been compiled showing that a positive Wassermann is obtained in from fifteen per cent. to twenty-five per cent. of all individuals examined. In considering the incidence of syphilis among applicants for enlistment in the United States Army, Capt. Vedder of the Medical Corps found a double plus positive reaction in 16.77 per cent. of accepted recruits who had passed two physical examinations;<sup>1</sup> he regards a double plus reaction as evidence of syphilis. According to Symmers the Wassermann reaction in the Bellevue Hospital, New York, has yielded strongly positive results in over twenty-five per cent. of the enormous number of sera examined, the examinations being carried out as a routine measure and not necessarily because contamination was suspected.<sup>2</sup> If one positive Wassermann test is accepted as infallible evidence of syphilis, the incidence of the disease is truly astonishing.

In many cases the evidences of syphilis are so manifest that the Wassermann as a diagnostic measure is superfluous, but under such conditions the test is of value in prognosis, as a guide to the efficiency of treatment and incidentally serves as a criterion of the accuracy of the test in the hands of different serologists. In obscure conditions or when the diagnosis is doubtful, the Wassermann should be of paramount importance as a diagnostic measure. It is self-evident that a test of such importance, and upon which so much depends from a social, economic and medical aspect, should be performed only by those duly qualified and thoroughly trained in every detail of laboratory technic. Every clinician who has made a study of the Wassermann by different serologists is willing to admit the value of the test as an aid to diagnosis, but in many cases he has been perplexed by a lack of uniformity in reports from different laboratories. One can readily understand in a test subject to so many possible errors due to a lack of uniformity in reagents and technic, that considerable error may occur, but it is difficult to explain the discrepancies in the reports from the same serologist upon two specimens of the same blood withdrawn at the same time. These experiences teach that a diagnosis of syphilis cannot safely be made, and the incidence of syphilis computed upon the basis of one positive Wassermann.

There is, unfortunately, a growing tendency to allow the laboratory technician to make the diagnosis of syphilis, and we feel that under such circumstances many are pronounced syphilitic upon absolutely unwarranted grounds. This mistake is frequently followed by grave and serious consequences, and many have

been unjustly deprived of position and advancement, disturbed in their social relations, and thrown into the depths of melancholy and despair, simply because a serologist at some time found their blood to react positively to the Wassermann. It must be borne in mind that a negative reaction does not exclude syphilis. A negative Wassermann is the rule during the first few days of a chancre, and in early secondary syphilis actively treated with salvarsan or neosalvarsan. Undoubted clinical evidences of syphilis exist in the presence of negative Wassermann reports from different serologists. It is in latent syphilis that the Wassermann should be of greatest value to the clinician, and it is unfortunate that in this stage of the disease the greatest number of discrepancies are found in the reports from different laboratories. In this stage of syphilis the clinical expectancy is based upon the history of infection, the duration of the disease, the time at which treatment was begun, the type and efficiency of treatment, and the results of previous Wassermann tests. Every case in this category varies, and it is essential that the test be performed by several serologists before giving an opinion.

Serologists have advanced many theories and factors as possibly influencing the accuracy of the test, among which are the age of the serum, the presence of infection, the type of glass of which the test tubes are made, and certain alterations in blood the result of disturbed metabolism. With the idea of determining how variable the reports from different serologists might be, as well as the influence of the above mentioned factors, we secured the co-operation of ten representative serologists of Philadelphia, and agreed to submit for examination specimens of blood taken under identical conditions from non-syphilitics and from syphilitics in all stages of the disease. At the time the blood was withdrawn a clinical expectancy was noted in each case, based upon our knowledge of the history and examination of the patient, and in known syphilitics the previous type and activity of treatment and the results of previous Wassermann tests.

Briefly summarized, the results of this study upon 325 specimens of blood from 292 individuals submitted to at least four serologists shows that the factors advanced by the serologists do not influence the accuracy of the test. In fifty-six cases a report was received from ten laboratories, an analysis shows that there were only twenty-one per cent. of reports that agreed. The greatest number of discrepancies occurred in latent syphilis and in syphilis under active treatment, when, as said before, the reaction should be of greatest value to the clinician. Positive findings were also reported by the various serologists in from two to eighteen per cent. of persons who denied syphilis, had no manifestations of syphilis, and were considered non-syphilitic. In syphilis with active manifestations the percentage of positive tests varied from fifty per cent. to one hundred per cent.

Having determined that the results of the Wassermann may vary to a considerable degree when performed by different serologists, and having proven to ourselves and the serologists that these discrepancies were not due to factors which the clinician could readily obviate, we determined that they must be due either to the reagents employed in the test, the technic of the test, or the personal factor of the serologist. With the object of determining the relative importance of the antigen as a possible source of error, specimens of blood from twenty-seven individuals, twenty-four of

<sup>1</sup> *Jour. A. M. A.*, May 6, 1916.

<sup>2</sup> Bulletin No. 8. War Department; Office of the Surgeon General.

TABLE 1.  
WASSERMANN WITH COMMON CHOLESTERINIZED ANTIGEN.

No.	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.
1	XXXX	X	XXXX	XX	XX	X	XXXX	XXX	XXXX	—
2	XXXX	XXXX	XXXX	XXXX	XXX	XXXX	XXXX	XXXX	XXXX	?
3	XXXX	XXXX	XXXX	XXXX	XXX	XXXX	XXXX	XXXX	anti	XXXX
4	XXXX	XX	XXX	XX	—	—	XXX	?	XXX	—
5	—	—	—	—	—	—	x	—	—	—
6	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	anti	—
7	XXXX	—	XXX	XX	XXX	XX	x	X	XXXX	?
8	XXXX	X	XXX	—	XXXX	X	x	?	XXXX	?
9	—	—	—	—	x	—	—	—	—	—
10	XXXX	XXXX	—	XXXX	XXX	XXXX	XXXX	XXXX	XXXX	XXXX
11	—	—	—	?	?	—	—	—	—	—
12	XXXX	X	XXX	?	XXXX	XX	XXX	XX	XXXX	XX
13	—	—	XX	—	—	—	—	—	—	—
14	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
15	XXXX	XXXX	XXXX	XX	XXXX	XXXX	XXXX	XXXX	—	XXXX
16	XXXX	—	—	—	XXXX	—	—	?	—	?
17	—	—	—	—	—	—	—	—	XXXX	—
18	XXX	—	—	—	—	—	x	?	—	—
19	—	—	XX	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—
21	XXXX	XXXX	XXXX	X	XXXX	XXXX	XX	XXXX	XXXX	XXXX
22	—	—	XX	—	—	—	x	?	—	—
23	—	—	—	—	—	—	x	—	—	—
24	—	—	—	—	—	—	x	—	—	—
25	—	—	—	—	—	—	x	—	—	—
26	—	—	XX	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—	—

x designates delayed negative.

TABLE 1.  
WASSERMANN WITH CONTROL ANTIGENS.

No.	A.		B.		C.	D.	E.	F.	G.	H.	I.		K.	
1	X	—		—	XXXX	X	XX	x	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
2	XXXX		XXXX	—	XXXX	XXXX	XXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
3	XXXX	XXXX	XXXX	XXX	XXXX	XXXX	XXX	XXXX	XXXX	XXXX	anti	XXXX	XXXX	XXXX
4	—	—	X	—	—	X	—	—	x	—	XXX	XXXX	XXXX	XXXX
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	anti	XXXX	XXXX	XXXX
7	—	—	XXXX	—	XX	X	XX	XX	—	—	XXXX	XXXX	XXXX	XXXX
8	—	—	X	—	XXX	—	XXXX	x	—	—	XXXX	XXXX	—	—
9	—	—	—	—	—	X	—	—	—	—	—	—	—	—
10	XXXX	XXXX	XXXX	XXX	?	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
11	—	—	—	—	—	?	XXX	—	x	?	—	—	—	—
12	XXXX	—	XX	—	XXX	X	XXXX	XX	XXXX	X	XXXX	XXXX	XXXX	XXXX
13	—	—	—	—	XX	—	—	—	—	—	?	XXXX	—	—
14	XXXX	XXX	XXXX	—	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
15	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	—	XXXX	XXXX	XXXX
16	XXXX	—	XX	—	—	—	XXXX	—	—	—	—	XXXX	XXX	XXX
17	—	—	—	—	—	—	—	—	—	—	XXXX	?	—	—
18	—	—	—	—	—	—	—	—	—	?	—	—	—	—
19	—	—	—	—	XXX	—	—	—	—	—	?	—	—	—
20	—	—	XXX	—	—	—	—	—	—	—	—	—	—	—
21	XX	—	XXXX	—	XXXX	XXXX	XXXX	XXX	XXXX	XXX	XXXX	XXXX	XX	XXX
22	—	—	—	—	XXX	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—	—	—	X	—	—
24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	—	—	—	—	XX	—	—	—	—	—	—	—	—	—
27	—	—	XXX	—	—	—	—	—	—	—	—	XXXX	x	x

TABLE 2.  
PERCENTAGE RESULTS OF POSITIVE AND NEGATIVE TESTS WITH COMMON CHOLESTERINIZED ANTIGEN.

No. of Tests	Lab.	Neg.	X	XX	XXX	XXXX	Per Cent. Neg.	Per Cent. Pos.
27	A.	13	—	—	1	13	48.1	51.8
27	B.	16	3	1	7	7	59.2	40.7
26	C.	11	—	4	4	7	42.3	57.7
24	D.	14	1	4	5	5	58.3	41.7
27	E.	14	—	1	4	8	51.4	48.1
27	F.	16	2	2	7	7	59.2	40.7
27	G.	17	—	1	2	7	62.9	37.1
20	H.	10	1	1	7	7	50.0	50.0
23	I.	13	—	—	1	9	56.5	43.5
22	J.	16	—	—	1	5	72.7	27.3

whom either had active syphilis or had received active antisyphilitic treatment, were submitted to each of ten serologists who agreed to use a common antigen prepared according to a formula which met the approval

TABLE 3.  
PERCENTAGE RESULTS OF POSITIVE AND NEGATIVE TESTS WITH CONTROL ANTIGENS.

No. of Tests	Lab.	Neg.	X	XX	XXX	XXXX	Per Cent. Neg.	Per Cent. Pos.
27	A.	17	1	1	—	8	62.9	37.1
27	B.	22	—	—	1	4	81.5	18.5
26	B.	12	2	2	2	8	46.2	53.8
27	B.	23	—	—	2	2	85.1	14.9
26	C.	12	—	3	4	7	46.1	53.9
24	D.	15	4	—	—	7	57.7	42.3
27	E.	13	1	2	3	8	48.1	51.8
27	F.	18	—	2	1	6	66.6	33.3
27	G.	18	—	—	—	9	66.6	33.3
23	H.	14	1	—	1	7	60.8	39.2
22	I.	12	—	—	1	9	54.5	45.5
26	K.	10	1	—	—	15	38.4	61.6
27	K.	15	—	1	1	10	55.5	44.5
27	K.	15	—	2	—	10	55.5	44.5

of all. They controlled their work with the antigen or antigens used by them routinely. With this common

cholesterinized antigen, disregarding all anticomplementary and doubtful reactions, all laboratories agreed in fourteen cases and disagreed in thirteen cases. Of the thirteen disagreements, one laboratory disagreed with all the other laboratories in ten cases, two laboratories disagreed with all the other laboratories in two cases, and in one case three laboratories disagreed with all the others. An analysis of the reports submitted by the serologists with their own control antigen or antigens showed an agreement in seven cases and a disagreement in twenty cases; a percentage of disagreement which practically corresponds with the results obtained in a previous study of the comparative value of the Wassermann. At the conclusion of this study it was conceded by all engaged in the work that the common antigen was a satisfactory one and the majority report with this antigen compares favorably with the majority report with the control antigens. It will be observed in table one that two serologists, B and K, have employed three extracts in conducting the Control Wassermann instead of one and in a few instances there are variations in the results with these three extracts. Tables two and three show the percentage of positive and negative results obtained by the various serologists.

From the above work the following deductions may be drawn:

Serologists frequently disagree in their Wassermann reports upon the serum of the same individual.

Disagreements are so frequent that the clinician should not be guided by the result of one test.

The sources of error are not those for which the clinician is responsible.

Using antigens of their own selection in these twenty-seven cases, serologists disagree in their reports in about seventy-five per cent. of cases; employing the same antigen the percentage of disagreements was reduced to about fifty per cent.

There is still opportunity for considerable improvement in the technic of this test for it to be of maximum service to the clinician. We would recommend the hearty co-operation of clinicians and serologists in order that the best results may be obtained.

We desire to thank the serologists engaged in this work for their hearty and painstaking co-operation.  
1701 Chestnut Street.

#### Night Blindness in Soldiers.

In a communication to the Paris Académie de Médecine, Dr. Wecker, lecturer at the University of Liège, called attention to the occurrence of hemeralopia in soldiers, a fact which he said did not appear to have been noted in former wars. Men who see quite well in daylight lose their vision at night, so that they fall into ditches, and into craters often full of water, and require to be helped on their way by their comrades. Often these men, though very brave, dread being put on duty as sentries at advance posts, feeling themselves unequal to the responsibility thus thrown upon them. If they are drivers of vehicles they are unable to do the work at night.

Of 3,977 patients in an ophthalmological service at the front, 409, or about 10 per cent., presented very distinct symptoms of hemeralopia. In all the fundus was normal. The principal cause of night blindness—nervous exhaustion, overstrain, want of sleep—are found in abundance among soldiers. A well-known form of the disease is that which occurs in endemic form in penitentiaries and orphanages, and in ships, owing to insufficient or improper nourishment. During the seven weeks just before Easter, in Russia, hemeralopia is very common. But among Wecker's patients there was no question of underfeeding. The treatment which he found successful was care of the general health and rest; decided improvement followed the wearing of smoked glasses. If any myopia, presbyopia, or astigmatism were present, those conditions were dealt with by appropriate glasses.—(*Brit. Med Jour.*, June 10, 1916.)

#### DEMENTIA PRECOX STUDIES. THE SPASM OF THE COLONIC SPHINCTER OR THE RING OF CANNON.

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We have elsewhere shown that the adrenalin reactions in patients suffering with dementia precox were paradoxical (Willi Schmidt's<sup>1</sup> reaction and Schulz's<sup>2</sup> reaction). These paradoxes are also present in animals and in patients intoxicated with ergot or with the toxic amines. The researches of Kolossow, show that in epidemic ergotism in Russia a noticeable mental deterioration is common to all the patients, and twenty-seven per cent., or more than one-fourth, show positive mental aberration, making them fit subjects for asylum custody. The chemical examination of the stools of dementia precox patients, made for me by Dr. Julius Retinger, showed the presence of large quantities of hetaiminazolyethylamine in the stool, 0.5 to 0.05 mg.

The fluoroscopic examinations after a barium test meal disclosed a rapid passage of the meal from the stomach into the cecum during the first six hours after ingestion. This is practically normal. The only exception was in one stuporous case of dementia precox.<sup>4</sup>

The tail of the test meal never left the cecum in any dementia precox patient until after the fifty-four hour seance, and in a large proportion of patients not until after the 120 hour seance. In one patient a large portion of the test meal was in the cecum at the end of two weeks, and in another patient the retardation extended into the third week.

There were two other remarkable disclosures made by the fluoroscopic examinations. In the first place, there was a U-shaped loop of the hepatic end of the transverse colon, and, in the second place, at the right of this loop there was a distinct contraction of the colon resembling the spasm of a sphincter through which long masses of the test meal, about the diameter of a two grain capsule and perhaps twice its length, could be squeezed through by careful manipulation. These could be observed passing along to the right (to the patient's left) with the peristalsis. (Fig. I.)

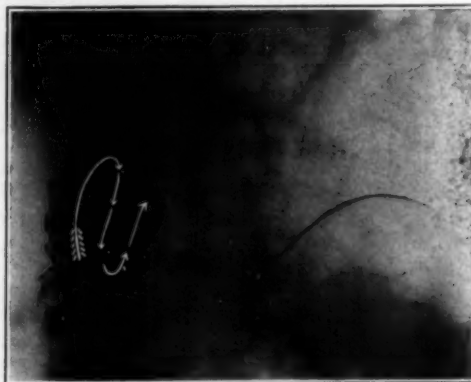


Fig. I.

It is well known that betaiminazolyethylamine is produced by the growth at 37° C. of one of the bacilli of the colon group (the *Bacillus aminophilus intestinalis*, of Bertrand and Berthelot<sup>5</sup>) upon a nutrient material containing histidin. In spite of the observation of Barger and Dale<sup>6</sup>, we may, therefore, presume that the toxic amine which we found in the stools of these patients was produced in a like manner in their cecums during the great retardation which we observed in the test meal.

There still remains the spasm of the colonic sphincter to account for. If we call in the analogy of the spasm of the cardia or spasm of the pylorus we shall violate no rule of judgment. In these latter patients there is a condition of "spasmophilia" or tetany, conditioned upon a diminution in the Ca content of the blood. So far the blood of our patients has not been examined for this element, but we have observed the abnormal load of Ca in the urine of several cases. This finding would be consistent with a fall of Ca in the blood below the normal ratio. I do not yet find any record of the examination of the blood of dementia precox patients for the Ca and the Na content, nor of a study of these patients for von Pirquet's electrical reaction.

The development of violent contractions of smooth circular muscle fibers is one of the most conspicuous reactions of betaminazolyethylamine. If this amine is produced in the cecum it might act upon the colonic sphincter and thus encourage the environment for its own development; that is to say, produce a vicious circle, or an unstable equilibrium. The theory that these amines are regulators of the intestinal movements is interesting in this connection, but it has not been well sustained. A vicious circle, like the one proposed above in a spasmophilic subject, would not be unreasonable. The function of the musculo-neural ligament, including the ligament of Treitz, may itself be at fault, and concentrate the action of the toxic amine on Cannon's ring alone, as happens in infants upon the pylorus alone in pyloric spasm.

The great similarity of the symptoms of dementia precox to those of chronic ergot poisoning has not secured so much attention as it deserves in the light of our demonstration of the most potent toxic amines in the stools.

Betaminazolyethylamine has little action upon the nerves, but seems to act upon the muscle itself. It differentiates between the striped and unstriped muscles, acting much more powerfully on the smooth muscles. It differentiates between the circular and the longitudinal fibers of the blood vessels acting mostly upon the circular fibers. While it relaxes the circular fibers of blood vessels it contracts most powerfully the circular fibers of the fine bronchioles of the lungs. In a lethal dose, which for a guinea pig of 300 grm. is less than 0.5 mg., it causes a spasm of the bronchioles immediately in front of the air vesicles of the lungs which are completely closed, and after the death of the animal the vesicles themselves are distended with air. It is this phenomenon which makes the analogy to anaphylactic shock so close that many observers have thought anaphylaxis might yet be found to be due to this toxic amine.

Of the many toxic amines responsible for the resultant action of ergot, betaminazolyethylamine is the most toxic and is responsible for the uterine contraction generally looked for in the administration of ergot. The action of paraoxyphenylethylamine or ergotoxin is antagonistic to the action of betaminazolyethylamine upon the blood pressure and slightly synergic to its action on the uterine muscles. It is, therefore, not improbable that the toxin contracts the circular fibers of Cannon's ring while relaxing those of the rest of the colon.

In chronic ergot poisoning the many toxic amines developed by the smut of rye are collectively, rather than separately, responsible for such symptoms as the burning skin, the abortions, the diarrhea, the trembling, the sordes and ulcers, the hemorrhages, the mental disturbances, the gangrene of the extremities, the stupor,

and the eventual death. In Western Europe the last epidemics of ergotism were in Lorraine and Burgundy a hundred years ago, but Eastern Europe, especially Russia, has hardly passed a decade without an epidemic of ergotism; thus it has been possible to study the condition from a modern pathologic standpoint. Taube long ago noticed cases of locomotor ataxia among the victims of epidemic ergotism, and held that the action of the poison upon the terminal arteries in the cord, causing contraction of their circular fibers and anemia of tributary cones, was responsible for the posterior spinal sclerosis. Now in my accidental observation of both the adrenal paradoxes in two patients with the gastric crisis of locomotor ataxia<sup>7</sup>, the pain was relieved and borborygmi appeared in the previously silent abdomen. The stools passed by these two patients during the following six hours contained large quantities of histamin, 0.5 to 0.05 mg. The stools of the same patients during the intervals between the attacks of gastric crises did not contain recognizable quantities of this toxin. (Fig. II and III.)

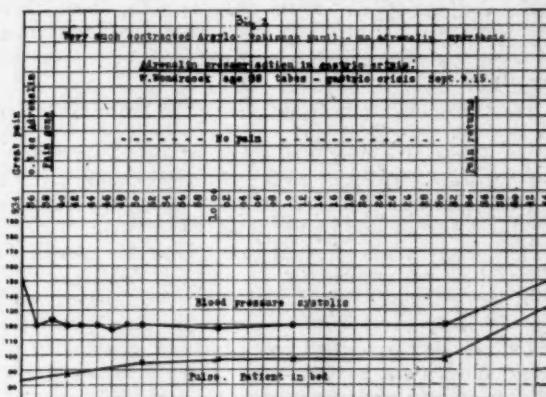


Fig. II. Gastric crises, Mr. W., first attack noticed. The relief of pain was instantaneous and constant but the patient did not sleep.

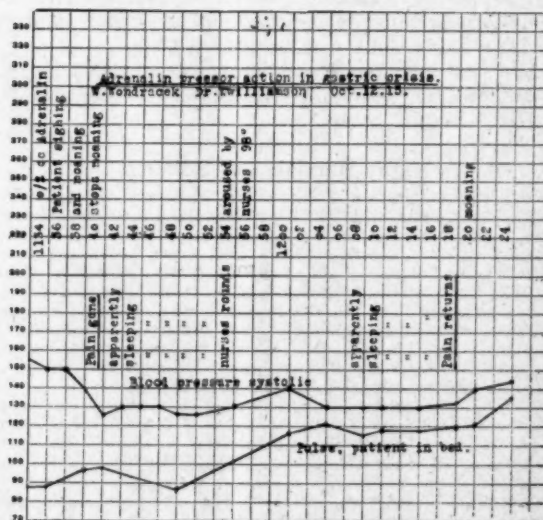


Fig. III. Mr. W., second attack of gastric crisis in which gastric ulcer was diagnosed. The patient slept. Pain disappeared at end of four minutes.

The most recent study of ergotism by Kolossow<sup>8</sup>, of Smolensk, puts special stress upon the fact that the mental strength is much reduced so that a little mental exercise causes profound fatigue and is followed by

stupor and somnolence. The attitude of the youth suffering of ergotism is indistinguishable from the attitude of dementia precox patients, and, moreover, youths are more prone than adults to the mental manifestations of epidemic ergotism. The mental manifestations are more frequent and more pronounced among youths than among the mature who are affected.

Reformatski has studied the condition of fifty-two patients with raphanic psychoses. The most frequent form, according to his observation, is acute mania with or without dementia. It generally appears immediately after a series of paroxysms with loss of consciousness sometimes months and sometimes only a few days after the onset of the first symptoms of ergotism. These patients are generally youths, and they have the stupid expression of imbeciles. They sometimes have paralysis of the facial nerves. They sit in a dejected attitude with the head and body bent forward. At intervals they fix their eyes upon some nearby object or look stupidly about them as if troubled with hallucinations. They stand still in one place or walk uncertainly and aimlessly, and frequently tremble violently as some dementia precox patients do, but for the most part they remain absolutely quiet. Their apperceptiveness is much reduced. They seem to have much difficulty in understanding questions and answer them tardily and reluctantly. They are apathetic, disoriented, and have episodes of delirium, convulsions, epileptiform fits, and periods of hallucination or delusion. After these acute manifestations they relapse into a deeper apathy or stupor. These moods are changing and sudden. Many patients have troubled dreams and are fearful of impending danger. They believe themselves drowning or being burned alive. Under the delusory fear they commit suicide or occasionally murder or become a danger to others.

It seems, from a study of the literature of epidemic ergotism, that in one epidemic and especially in one locality the proportion of violent symptoms is much greater than in another epidemic or in another locality. This is consistent with our knowledge of ergot as a pharmaceutical remedy. There is no article in common use in medicine more unreliable and more fluctuating in its action than the *Extractum secalis cornuti*. Even *Tr. digitalis*, in its old form, was not more uncertain. The properties given the rye bread by the smut were equally variable, depending upon the moisture of the soil, the humidity of the atmosphere, the temperature of the days and nights, and the stage of maturity of the rye when the growth of the smut set in. The effect of eating the smutty rye bread depended not alone upon the properties of bread, but also upon the amount of bread eaten, the proportion of other foods, and the susceptibility of the victims. Kolosow asserts, for example, that adolescents are particularly susceptible to the mental manifestations of epidemic ergotism.

There are a dozen toxic amines in the ergot of rye and although the betainazolyethylamine is probably the most toxic, its influence upon the nervous elements of brain and cord may be retarded or accelerated by other less toxic amines or by favorable or unfavorable combinations.

In studying dementia precox, in co-operation with Dr. Julius Retinger, we demonstrated large quantities of betainazolyethylamine in the stool, but we did not have the time or the resources to make search for other amines that might modify the action of this venom. There are, beside histidin from which this toxin is derived, twenty other amino acids poured into the cecum from the small intestine under conditions

favorable to the production of twenty other toxins, some of which might be antagonistic and some synergic to the venomous histamin.

Thus the varying symptoms of the different patients would be easily accounted for. It would be very desirable to conduct these researches on a much grander scale with several chemists, several bacteriologists, and several physiologists, working upon the same material, and a material under protracted observations. The spasmophilic reactions now being applied by me are necessarily applied to patients upon whom the hemolytic, defensive ferment, fluoroscopic and chemical tests have not been made. All we can go by is the uncertain clinical diagnosis.

But "the proof of the pudding is in the eating." If we have not been deceived by the results of our researches the toxemia of dementia precox patients can be brought to an end by the daily irrigation of the cecum through an appendicostomy. This does not mean that the patient will be cured, but the progress of the disease will be arrested. Repair and re-education can begin. A few patients have already submitted to this procedure. The cecum is flooded with several quarts of warm, yeast-containing water, sweetened with glucose. This is done four or five hours after the last meal of the day, when all the amino acids have entered the cecum. In some cases the blood pressure approaches normal by the end of two weeks. So far only our work has gone. Much remains to be observed. The mental habits can be successfully attacked only after the bodily conditions are relieved of the distressing toxemia. Re-education, physical and mental, can then begin under wise medical direction. The appendicostomy opening should remain for a life-time if necessary and irrigations continued as long as there is any tendency to low blood pressure, adrenal paradoxes, or other symptoms characteristic of the disease, or until research offers a more effective remedy.

<sup>1</sup> Schmidt, Willi, Adrenalin unempfindlichkeit der Dementia precox. Münch. med. Woch., 1914, lxi, 366.

<sup>2</sup> Schultz, J. H., Beiträge zur somatischen Symptomatik und Diagnostik der "Dementia precox." Monat. f. Psych. u. Neur., 1915, xxxvii, 205.

<sup>3</sup> Kolosow, G. A., Geistesstörungen bei Ergotismus. Arch. f. Psych. u. Nervenkrankh., 1913-14, lili, 1118 Trans. in Chi. Med. Rec., 1916, xxxviii, 271.

<sup>4</sup> Holmes, Bayard & Retinger, Julius, Clinical dementia precox without known disturbed periods, scant adrenalin mydriasis, and diminished pressor adrenalin reaction. Typical defensive ferment reactions, cecal stasis, large load of betainazolyethylamine in the stool. Chi. Med. Rec., 1916, xxxviii, 60.

<sup>5</sup> Berthelot, A. & Bertrand, M., Sur quelques propriétés biochimiques du *Bacillus aminophilus intestinalis*. Compt. rend., 1912, cliv, 1826.

<sup>6</sup> Barger, G. & Dale, H. H., Betainazolyethylamine, a depressor constituent of intestinal mucosa. Jour. of Physiol., 1910-11, xli, 499.

<sup>7</sup> Holmes, Bayard, The adrenalin reaction in gastric crisis of tabes and the significance of betainazolyethylamine in the feces. Lan.-Clin., 1915, cxiv, 392-4.

### Cancer Dangers.

W. P. Cunningham of New York says moles and warts and scars are prone to degenerate if subjected to repeated irritation, especially in the evening of life. These abnormalities should be kept under intelligent observation, and if they display any activity or arouse any unusual sensations should be immediately put in the hands of the surgeon for speedy excision. The senile keratoses so common on the skin of the old, the little wart-like excrescences and little scurfy patches so frequent on their faces and their hands, offer peculiar opportunities for the development of epithelioma. They have been called "half-way houses" on the road to malignancy. They should be subjected to no avoidable irritation, and above all should not be "treated" with the meddlesome notion of cleaning them up. They should be handled with gloves, as it were, and gently carried along to a quiescent end. The pressure of nose glasses has been sufficient to excite such a skin to perverse activity. The pressure of a tight hat-band has served to arouse the latent fury of an old and disregarded birth-mark. When the normal cells of a part are giving way to the paralyzing touch of advancing senility these aberrant pariahs, these treacherous non-conformists, seem to be invested with a new lease of life and viciously attack the host that has nourished them for years.—(Therapeutic Gazette, August, 1916.)

## INTESTINAL AUTOINTOXICATION.

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If, in a normal manner, man could be *born* clean as to his body and could *keep* clean internally, as well as externally, perpetual health and youth would be enjoyed.

Man, as to his body, is almost wholly composed of water; and the body's absorption of noxious matter determines both his deterioration and his age, which are indicated by the condition of his skin, teeth and hair.

It is said that Lot's wife, on looking back, was turned into a pillar of salt. May it not be truthfully said that modern man, on looking forward for more and richer food, turns his body, through faulty metabolism, into a composite of sand, gravel, crystals, stones and other non-vital substances; that he gradually mummifies it by ptomain products, and embalms it by toxic matter; thus slowly turning it into a pillar of soil?

The somewhat clear, clean fluids and tissues of his youthful body become slowly denser and heavier from toxic bacterial substances, and from other products of intestinal putrefaction, since they are retained in the blood as well as in all of the tissues of the body. Man's body is only a leaky, tubular, porous and cellular bag of fluids, with a pump in it to keep the fluids moving to the various avenues of escape; the bowels, kidneys, skin and lungs.

Some questions may pertinently be asked here:

If the body contains one hundred pounds of fluid, how much water should its owner drink daily to keep it clean and fresh?

How often should the contents of the stomach and bowels be evacuated daily, to keep them clean and pure?

What quantity of water should the bowels, kidneys, skin and lungs eliminate daily?

Just what quality is eliminated daily, and what quantity, by the radio-activity of the body?

These questions are vital to the consideration of the life-extension of man and to his efficiency as a citizen.

Both science and common sense inform us that the daily intake of food and fluids should be equal to the physical exhaustion and elimination. But man is frightfully ignorant of and reckless with the normal functioning of the large intestine—the great waste-sewer of the body.

The body of man is only an extension of his alimentary tube. It naturally follows that chronic fecal and gaseous stasis and constipation of the contents of the great feeding and sewer way of the body results in stasis and constipation of all the other eliminating tubes radiating from this tube. The stasis and filling up of the small secretory and excretory tubes of the mucous membrane and skin, by toxic substances of various degrees of intensity, results in faulty metabolic changes in mucous membrane, skin, glandular, connective and fatty tissues; and the denser tissues of the body become invaded by toxic and other deleterious substances, setting up in some parts an inflammatory process that slowly widens the area of invasion, which is manifested in some form of rheumatic, catarrhal and cutaneous troubles; or the more vital organs of the body may give way to the burden of harmful products.

The renal organs may be greatly disturbed by the systemic stasis and constipation, forcing various faulty metabolic products upon them (as indicated by examination of the urine), and the kidneys and bladder, like

all other tissues of the body, may become congested and inflamed from stasis and undue retention of the abnormal metabolic substances that should not have been permitted to generate and remain in the system.

Much is written about the stasis and constipation of the contents of the gastro-intestinal tube of man, and the putrefactive changes that occur in its stagnated contents, but the stasis and constipated condition of the countless other eliminative tubes of the body, with the consequent toxic changes in them, are neglected, hence the various maladies of the skin, mucous membrane and other membranes.

The moment the stomach and bowels are foul the entire system is concurrently unclean, and autointoxication and autoexemia indicate the source of the numerous ills from which man suffers. All the organs and tissues of the body are equally disturbed by the faulty metabolic products. The disturbance results in disease of one or more organs of the body, to which the physician directs his treatment, which, when followed by failure to cure, occasions loss of confidence both in doctors and medicines. Makeshift treatment, instead of accomplishing good, tends to place the prescriber and his remedies in disrepute. The ineffectiveness of the treatment arises from the fact that the organs of the body are unable to eliminate their abnormal products, which are then a source of further autoexemia.

Intestinal autointoxication and systemic autoexemia, from stasis or constipation of all the large and small eliminative tubes of the body, occasion decreased vitality and depressed mentality. It is then that the chronically tired and weary mortal—ever unrested and unrefreshed, filled with vague aches and pains—turns for stimulation into a self-prescriber, and makes use of the most convenient stuff at hand, such as coffee, tea, alcoholic beverages, etc. In due time the drink evil has fastened itself upon him, for he has formed the habit of looking upon them as banishers, for a time, of the dull, tired feelings of his body and mind.

A large percentage of mankind get no enjoyment or pleasure out of life through the ideal use of the mind. Wherefore bodily sensations are with them the end and aim of existence. Sooner or later they find that alcoholic drinks, tobacco, tea, coffee and various drugs produce the sensations sought, and that to resort to them leads to their addiction. The agreeable relief that they find tempts to increased and more frequent indulgence. But the artificial stimulant or sedative inevitably greates the perversion of functions that were already in a burdened and clogged condition, with various pernicious products that had been absorbed from foul intestines and self-generated in the tissues of the body, and that should have been eliminated constantly through the eliminative organs.

So long as man suffers from intestinal stasis and constipation, from digestive annoyances and from foulness of all the tissues of the body, just so long will he resort to stimulants and sedatives as a makeshift to ameliorate his ills, and to animate with some zest his dull, depressed and dreary existence.

Intestinal autointoxication is a universal affliction. It must therefore have a common cause. This cause can be traced, as a rule, to proctitis and sigmoiditis, with their primary and secondary symptoms—mucus channels, cavities, periproctitis and perisigmoiditis, abscess, fistula, piles, pruritis ani, etc.

The absorption of a large amount of the inflammatory products from mucus channels and cavities is another grave source of autotoxemia that has been entirely overlooked. I believe that all so-called cases of neuras-

thenia and lypemania are conditions that can be traced to absorption of large quantities of inflammatory exudates—foul substances from the intestines, and poison generated in all the tissues of the body.

In all cases of chronic proctitis and sigmoiditis, mucus channels, cavities, periproctitis and perisigmoiditis, the rectal spaces are invaded by the inflammation and its products. The pelvi-rectal spaces located anteriorly are more closely connected with the uro-genital organs, separating the rectum from the bladder, prostate and seminal vesicles in man. Early in the history of proctitis, etc., the perirectal spaces are invaded by mucus channels with their attending inflammatory process, involving an astonishing amount of space in their ravages, and very frequently remain during a lifetime without pus forming, even in a section of one of the numerous channels and cavities.

This severe pathological condition, existing so many years, is no doubt one source of the origin of disease of the prostate gland and the seminal vesicles. In its disturbance of the whole system it thus disturbs very much the genito-urinary organs.

As an illustration of treating a special organ while neglecting the general condition of a sufferer, the following case may be cited:

Mr. B., aged 39, of Atlanta, Ga., came to me for treatment of a fistula. He was also suffering from tuberculosis in its first stage, and had spent over six hundred dollars for treatment of the lungs. His physician would not operate on the fistula on account of the lungs. Examination of the lower bowels revealed chronic proctitis, periproctitis, sigmoiditis, perisigmoiditis, with channels and cavities in the rectal spaces, in one of which pus had formed and opened. As long as he could remember he had suffered from chronic constipation, bowels not moving in three or four days, if not aided; skin dry and harsh; could not perspire; partook of but small amount of fluids; muscular rheumatism in the fleshy parts of the arms, legs and along the spine and over the buttocks. There was a loss of 20 to 30 pounds in weight, and the usual cold hands and feet from disturbed circulation of the blood. His neurosis, neuritis, and other affections of the nervous system, induced by chronic auto-intoxication, was rapidly turning him into a pillar of dirt.

Diseases of the skin, mucous membrane and other structures of the body are usually an indication of a system overburdened with waste and toxic products; whence it is well, nay, best, to treat the systemic trouble; diseases which we characterize with arbitrary names as though they were the seat of the trouble.

Three decades ago I realized that the then numerous "liver remedies" prescribed for intestinal stasis and constipation were only poor makeshift treatments for gastro-intestinal foulness and for the condition of the entire system as well. Now the fashion has changed to a single makeshift, that of rock oil to "free" and "clean" the alimentary tube and the other countless secreting and excreting tubes of the body—"free" and "clean" them from stasis and constipation by lubricating the nutrient and waste products of the digestive and eliminative apparatus. Fishermen know the value of oiled fabric for a suit, and I trust the spirit of man will not object to a thoroughly oiled carnate suit also!

As a rule, from the cradle to the final inn of man's carnate form, he should induce free perspiration by use of a hot room or a cabinet two or three times a week. This may be followed by massage of the whole body, daily physical exercise, proper amount of good food and two quarts and over of water during the day. Defecation should occur freely two or three times a day, and if disease of the lower bowels prevents it, use should be made of the enema, local treatment and medicated hot-water baths in the lower bowels to reduce the chronic inflammation of the rectum and

sigmoid flexur, the etiology of which can usually be traced to the soiled and neglected diaper.

Job must have suffered from proctitis and sigmoiditis, with all their local primary, secondary and general toxic bodily symptoms. His doctors called it hysteria or hypochondria, but at the present day the Jobs have neurasthenia and lypemania, and recite their poems of woe to the doctor, who removes as many organs (or shortens them) as the sufferer will permit, and then continues to prescribe rock oil and abdominal support for intestinal auto-intoxication and autotoxemia, thus oiling and bracing them up while on their way to a wooden kimono!

Which shall we do: cut, brace and oil the modern Jobs, or simply cleanse them with heated water, inside and out, until all the tissues of the body are in a hygienic condition, performing their functions normally?

Let us, in the great majority of cases, sweat, wash, massage and rinse them outside and inside for a few months, and only thereafter, if it be found to be really necessary, resort to abdominal surgery. After thirty-five years of active practice along these lines I am in a position to speak with some degree of authority.

By keeping the eliminating tubes of the various secretory and excretory organs normally open and clean daily, the sufferings of Job, so wonderfully depicted by him, as well as by other sufferers from neurasthenia today, will be unknown to man.

43 West 45th Street.

### Care of Baby Teeth.

S. A. Horning, D.D.S., believes that if a baby tooth is extracted too soon it leaves unobstructed the way for the second tooth to come through, which it does, and before it has accumulated sufficient lime salts to make it proof against the action of the fluids of the mouth, and as a result you find the tooth attacked by decay, and sooner or later, usually sooner, broken down. Sometimes by extracting a baby tooth too soon the jaw has not widened enough to let the second tooth come in its proper place; as a consequence the second tooth will come in a mal-position.

I venture to say that there is not one baby in ten thousand with their teeth in a mal-position, and I will also say that the 999 might have even, regular teeth, if they receive the regular daily attention they are entitled to. This care might not always prevent decay, because of other interfering influences.

Allow the child to nibble bones and chew hard foods. It helps to clean the teeth. Bread crusts they so dislike should not be eaten by mother. Insist on regular feeding hours, both in the baby and also in the child. Nothing disturbs a child more than irregular meal time, or the piece between meals. The 40 chews to the swallow theory is for the child as well as the grown person. Every child requires sweets in some form. Pure candy is good for them. It is the candy that remains in the mouth around the teeth that does the harm. After each meal the mouth and teeth should be cleaned, so that nothing is left for the germs always present in the mouth to work on.

The only proper method of cleaning the teeth with the brush is down on the upper teeth inside, and outside, and up on the lower jaw. Don't try to clean the whole side of the mouth with one sweep of the brush, but see that the brush touches each tooth on all sides. The natural tendency is for food to crowd between the teeth, and the brush used lengthwise of the tooth not only cleans these spaces, but is a stimulant to the gums in between the teeth. The continued use of tooth picks will crowd the gum out from between the teeth, and of course leave a space for the food to enter. These spaces thus formed will in time become diseased areas, and a menace. For removal of any food you are not able to remove with the brush use dental floss.

It is much better to prevent the destruction of tooth substance than to repair the decayed and broken-down part. This is the age of sanitation and hygiene, and may our children when they mature find that we have not been lax in our efforts for their welfare.—(*Public Health*, June, 1916.)

A due utilization of carbohydrate is of supreme importance to the welfare of the body, and it is, moreover, essential to the maintenance of nitrogen equilibrium.

## FOOD AND FEEDING IN CHILDHOOD.

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In an article in the *MEDICAL TIMES* for September, 1916, on "Food and Feeding in Infancy," I briefly outlined the proper diet for an infant during the first year of life. Beginning with the second year, the period of infancy ends, suckling or bottle feeding is over, and the active life of childhood asserts itself. The gastrointestinal tract which during infancy is in an immature state with its physiologic functions of digestion not yet fully developed, is now able to digest and absorb a variety of semisolid and solid food. At this age the child usually has a number of teeth already cut through and is able to masticate the food, preparing it for the action of the digestive enzyme. As the child grows older, the articles of food suitable for its digestion multiply, and the simple, uniform, monotonous diet of infancy which consists of milk only, is now changed to a mixed diet.

Although a great deal of attention has been given to the food and feeding of infants, the diet of children has received scant consideration. The fact that some children thrive on any kind of food is no excuse for permitting children to have food not suitable to their age and digestive powers. While some poor children are underfed, the majority are overfed or improperly fed. They eat what they like and when they want, and at this early age they lay the foundation for future digestive troubles. Many ills of childhood are the result of gastrointestinal indigestion or intoxication caused by improper food or irregular feeding, and the proper treatment consists not in the administration of drugs, but in the correction of the dietary errors. A printed or written dietary list of the kind of food and the regular hours of feeding should be given to every mother to guide her in the care of her children.

The diet during childhood may be divided into three periods.

1. Diet during the second year.
2. Diet during the third, fourth and fifth years.
3. Diet during school years.

The diet during the second year is practically a continuation of the diet of the first year and should be given with the same care. Milk still forms the basis of the food, with the addition of protein, carbohydrates and fats from other sources than milk. Semisolid and later solid food may be gradually added to the diet and the feeding should be at four-hour intervals.

The following is a suitable diet list for children during the second year:

- 1—At 7 o'clock a cup of milk.
- 2—At 8 o'clock orange juice or the juice from other ripe fruit.

Breakfast at 10 o'clock:

- 1—A well-cooked cereal: barley, oatmeal, wheatena or farina with a pinch of salt and cream.
- 2—Buttered toast.
- 3—A soft boiled egg.
- 4—A cup of milk.

Dinner at 2 o'clock:

- 1—Soup: chicken, mutton or beef broth with a little green vegetable and a boiled or mashed potato.
- 2—Meat: scraped or chopped, to be given during the second half of the second year.
- 3—Stale bread with butter.
- 4—Dessert: junket, baked apple or apple sauce.

Supper at 6 o'clock:

- 1—A well-cooked cereal with cream.
- 2—Zwieback or crackers or stale bread with butter.
- 3—Cooked fruit.
- 4—A cup of milk.

At 10 o'clock a cup of milk.

Nothing but water should be given between meals.

After the second year the child is able to digest a larger quantity and a greater variety of food. As the child grows older it is more active and there is a corresponding increase in metabolism. More food is required to replace worn-out tissues and to supply heat and energy.

The following diet list will be found suitable for children between the third year and school age:

Breakfast at 8 o'clock:

- 1—A well-cooked cereal with cream.
- 2—Bread and butter or buttered toast.
- 3—A soft-boiled or poached egg.
- 4—A cup of milk or cocoa.

Dinner at 12 o'clock:

- 1—Soup with green vegetables and a mashed or sweet potato.
- 2—Meat: beef, lamb or chicken. Fish may be given occasionally.
- 3—Bread and butter.
- 4—Dessert: pudding, junket, custard, baked apple or ice cream occasionally.

Supper at 6 o'clock:

- 1—Well-cooked rice or other cereal with cream.
- 2—Milk toast or bread and butter.
- 3—Cooked fruit.
- 4—A cup of milk.

No food between meals, but water should be given.

The following must not be given to young children: tea, coffee, beer, wine, whiskey, fried food, corn, cabbage, cucumbers, pies, cakes, nuts, raisins, bananas and candies.

The diet of school children must receive special attention. "School days" is an extremely active period of life, both physically and mentally. During school years the budding mentality of the young child gradually develops itself and there is an extra demand on the nervous system which increases the general metabolic changes of the body and the wear and tear of life. A plentiful and proper diet is required to repair the worn-out body and mind and to keep up the steady normal growth. School teachers cannot have much success in teaching hungry children. No pupil can learn the three R's without three meals a day. In a hungry child all the normal processes of life are lowered and the mentality is dulled. The diet of a school child must be sufficient, satisfying and not monotonous. Milk being easily digested, should be furnished with every meal as a drink. Cream is very valuable and should be supplied whenever possible. Eggs and meat are very important as they supply a large quantity of protein from which the tissues are built up.

The following is a good general diet list for school children:

Breakfast at 7.30:

- 1—Fruit.
- 2—A well-cooked cereal with cream.
- 3—An egg, boiled, poached or omelet.
- 4—Bread and butter, or griddle cakes occasionally.
- 5—A cup of milk or cocoa.

Dinner at 12.30:

- 1—Soup with green and white vegetables.
- 2—Meat: steak, beef, lamb chops, mutton or chicken.
- 3—Bread and butter.
- 4—Dessert: rice pudding, hominy or custard.
- 5—A cup of milk.

Supper at 6.30:

- 1—Cold meat or fish.
- 2—An egg in any form.
- 3—Bread and butter.
- 4—Cooked fruit or plain cake.
- 5—A cup of milk or buttermilk.

Protein, carbohydrates, fat, salts and water are the principal compounds of which food is composed and their chemical elements are similar to those of which the body is composed. When food is properly digested and absorbed it replaces tissue waste and supplies heat and energy on which the processes of life depend.

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## THE AIR OF SCHOOL BUILDINGS.

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Popular tradition usually attributes to carbon dioxide all the malevolence with which vitiated air is credited. Out-of-door air contains normally of this substance about three parts in ten thousand. Popular tradition has it also that a proportion materially greater than three parts in ten thousand is apt to produce headache, lassitude, and other functional disturbances. Being a layman, a discussion of this phase of the question is none of my business. I merely wish to point out the fact that the air of bedrooms, dormitories and ill-ventilated school rooms contains in many instances a proportion three or four times as great; and the air of church auditoriums, Sunday school rooms and lodge rooms, especially those of the Masonic craft, contains, in some instances, a proportion larger than that of bed rooms. A test of the air in a certain church auditorium set me wondering how the spirit of God could have dwelt there. Frankly, I do not believe that a frame of mind necessary to enjoy and to appreciate the devotional work in either church or lodge can be attained in the foul air that prevails in many of them. If the saliva ejected from the mouth of one individual were to be transferred to the mouths of all others present, the feelings alone would suffer; but when one breathes air and water vapor that has done scavenger duty in lungs and bodies of half a hundred other people, the case is wholly different. The gaseous waste products of the body, if not rank poisons, certainly are not wholesome.

Now I have reached a stage in experience where I care but little about the per cent. of carbon dioxide, *per se*. I rarely make a quantitative measurement of it in a school room, unless there are specific reasons for doing so. Experience has taught me about how much to expect. But here is the crux of the whole matter: if the carbon dioxide of a room comes from the furnace, or heating plant, carbon monoxide is pretty certain to be present, and a proportion of one part of this gas in one thousand of air is highly dangerous.\* Carbon monoxide, moreover, will pass quite freely through red-hot cast iron of furnace thickness; it will pass very freely through sheet iron when at a temperature scarcely reaching that of redness.

In my own experience, many of the cases of "very bad air" are due to the presence of this gas, and when the proportion thereof is as great as one part in ten thousand, continued breathing of the air is followed by a marked disturbance of bodily functions.

Carbon monoxide burns with a lambent blue flame, and if the blue flame is in evidence, the gas is undergoing combustion. If there be no flame much of the gas is escaping uncombined. The escape of any carbon monoxide is due to the fact that not enough air is admitted to the fire box to insure complete combustion. It is also given off when, by improper stoking, the temperature at the top of the coal charge is below that of combustion. The escape of carbon monoxide is the result of carelessness or else a lack of proper training on the part of those responsible for the condition of a building. The furnaces and heating plants of a modern building are so safeguarded that the exercise of ordinary intelligence will prevent its escape.

\*Carbon monoxide CO forms a definite compound with the haemoglobin of the blood conventionally represented by the symbol HbCO. Being a very stable compound it practically prevents the oxygenation of the blood, from which it is eliminated very slowly.

Bodily comfort requires that the air of a building should have from fifty to seventy-five per cent. of the moisture required to saturate it. The delightful air of a bright June morning is due, not to the presence of ozone, but to the fact that its content of sixty per cent. of humidity is moistening a dry skin. So far as ozone is concerned, the proportion present is but little more than half that of the nitric acid present. During the warm months, when open doors and windows are the rule, if the humidity out of doors ranges from seventy to ninety per cent., that of the indoor air may range from five to fifteen per cent. less. During the winter months, no matter what the humidity of the air out of doors may be, that of indoor air ranges from twenty-eight to thirty-five per cent. in practically all heated buildings. The exceptions are the few buildings in which the air is cleaned and humidified before it is delivered to the rooms. In most buildings constructed with mechanical ventilating systems, the humidification of the air is an easy matter. A steam jet or a water spray properly adjusted within the tempering chamber answers the purpose very well. Three or four pounds of water vapor are present in the air of a class-room of ordinary size properly humidified and at a comfortable temperature. A residence warmed by steam or by a hot water system is a difficult problem. In my laboratory two Turkish towels, saturated almost to the dripping point, moisten the air from twenty-eight to forty-five per cent., and the latter degree of humidity is obtained with difficulty. The dimensions of the room are 25x12x8.5 feet. Water pans on the radiators increased the humidity less than two per cent.; indeed, about one-fourth of the floor surface, if covered with water, would scarcely raise the per cent. of humidity to a degree required for comfort. A sheet of large size, kept saturated, furnished just about the amount of moisture required, when suspended from the ceiling of the room.

The problem of humidifying the air of buildings warmed by hot-air furnaces is solved in part by the water pan in the air chamber. At the best, however, the humidity is not raised above forty per cent. The air of steam-heated rooms may be rendered far more comfortable if a small jet of steam be allowed to escape from the pet-cock. The unpleasant hissing of the steam, however, is highly objectionable to many. Hot water systems offer no ready means of humidifying the air of rooms, and I know of no method better than the inconvenient and sloppy one noted—that of hanging a square yard of thick cloth saturated with water behind each radiator.

The humidifying of the air of school rooms is one of the most important problems in the sanitary regulation of school buildings. Up to the present time it is practically neglected. As a result, during the months when fires are necessary, the air of most school rooms is unfit to be breathed—all of which is wholly unnecessary. As a matter of fact, in buildings provided with mechanical ventilation, the air can be humidified not only without cost, but even with a saving of from five to eight per cent. of the fuel consumed; for moist air may be maintained at a uniform temperature far more easily than dry air.

In many manufacturing establishments where a considerable number of operatives is employed the air of each room is exhausted, screened to remove the dust, washed, and then returned to the rooms without loss of temperature. The saving in fuel very quickly overbalances the cost of installation and operation.

The dust problem of public buildings, especially of

school buildings, presents many difficulties. From time immemorial, devices for the removal of dust have been used; until within recent years methods of prevention have not been seriously thought of. Yet, school rooms excepted, practically all the dust that is removed from such buildings is first brought into them. Flying dust is blown into them through open doors and windows; it is also blown into them through their crevices when the doors and windows are closed. A considerable amount is drawn into mechanically ventilated buildings through the intake. Perhaps the greatest proportion is tracked into the buildings.

In cities, as well as in rural districts, public streets furnish most of the flying dust. This, however, does not include the regions where dust storms prevail; it applies to regions of ordinary rainfall, where practically every part except streets and roads is covered with vegetation. In cities and towns where the street traffic is considerable, a large part—perhaps the greater part of the flying dust—consists of horse dung; in the fall, the most of it is the finely ground substance of leaves. Either substance, being very light, is readily sorted and separated from the heavier earthy matter, and is therefore the most apt to be carried into buildings. Not much dust of any sort is carried more than two hundred feet above the ground, except during long continued dust storms, or during very strong winds. The lighter dust, however, as well as that which results from electrification, may be whirled to greater heights. Most of the flying dust arising from street traffic is preventable—not by sprinkling, but by tarring macadamized and dirt roads, and by a daily washing of asphalt and other hard-paved thoroughfares. The tarring of the street on which my laboratory fronts reduced the amount of flying dust about ninety-five per cent.

Some dust is created within doors. Much of the dust of bed-rooms consists of floury particles of epidermis rubbed from the body. For the removal of this, the vacuum cleaner surpasses all other means. Next to this is a daily shaking of sheets and blankets out-of-doors. In school-rooms, crayon dust is a universal nuisance, but much of it is preventable. Removable crayon bins, steatite crayons, and the use of a damp cloth in the place of the felt rubber will overcome blackboard dust to the extent that it is scarcely measurable.

The dust that is drawn into the air-ducts at the intake is easily preventable. A screen of cheese cloth stretched between the intake and the tempering chamber will remove nearly all of it; if the screen is kept wet by a drip or by a spray, the air will be made clean enough for almost any purpose. The modern school building, as well as the modern factory, usually is equipped with all the facilities for delivering good, clean air that is moist enough for the demands of bodily comfort.

For the greater part, indoor dust is "tracked" into buildings. If one treads upon a piece of black cloth, after walking a few minutes on a sidewalk that is apparently clean, the imprint of the foot will be outlined in dust particles, and the number will be from 1,000 to 5,000 for every square inch when counted under a one-inch objective. The rest is merely a sum in multiplication. To say that the dust particles tracked daily into public buildings number millions and millions is putting it mildly.

Now the in-tracking of dust cannot be prevented by any means that are practicable. In the case of city school buildings it can be reduced somewhat by flushing daily the walks within one hundred feet of the entrance;

a ten-foot strip of rubber matting in front of the door will also greatly reduce the amount of in-tracked dust. The next best thing is to prevent floor dust from becoming flying dust, and this is easy. No amount of scuffing or sweeping will send very much dust upward from a properly oiled floor—and intelligent training is quite as necessary in oiling a floor as in varnishing it. My own experience of eight years in the supervision of school buildings has led me to the conclusion that a good floor oil properly applied is the best floor dressing for school buildings—and about the worst if improperly applied.

The purport of this article is the emphasis of the fact that, with intelligence and care, the air that is delivered to the class-rooms of school buildings may be made as clean and as bracing as that of a June morning. Most of the buildings provided with mechanical systems are capable of doing this. There is no reason why horse dung, putrescent garbage, tree smut, ashes and the dismembered fragments of insects should be delivered to class-rooms to be breathed by the pupils. There is no reason why abnormally dry air should be permitted in any building, public or private; and, accidents excepted, there is no excuse for the escape of carbon monoxide from a heater. The existence of these substances, which is the rule rather than the exception in school buildings, is unnecessary and avoidable.

Meteorological Laboratory.

#### Suggestions With Regard to a Rational Emetine Therapy.

Levy and Rowntree ask and answer the following question: How may the toxic effects of emetine best be avoided? As the result both of clinical and laboratory observations the following suggestions are presented:

1. The administration of emetine hydrochloride is not to be regarded as a harmless procedure. Even in therapeutic doses ill effects may follow its use.
2. Individualization by close clinical observations is essential both for the success and safety of the treatment. Patients may differ markedly in their susceptibility to the drug, and the various commercial preparations vary widely in toxicity. These points are strikingly demonstrated by the toxicity experiments reported by the writers.
3. The treatment should be given in courses, at intervals of several days or a week. The subcutaneous route is the one of choice. Individual dosage and the duration of each course must be determined by the exigencies of the case. One-third grain three times a day for a week or ten days is usually a safe dosage in amebic infections. It is rarely necessary to give more than  $1\frac{1}{2}$  grains daily. In the treatment of pyorrhea, Bass and Johns advocate  $\frac{1}{2}$  grain daily for from three to six days, and maintain that no case need have more than six days' treatment. Under ordinary circumstances this seems well within the margin of safety. It must be borne in mind, however, that the administration of even relatively small doses over a long period of time may prove harmful.
4. The large dosage advocated by Baermann and Heinemann is unnecessary and dangerous.
5. Intravenous injections should be employed only in extreme cases. If this mode of administration seems imperative, small doses, well diluted ( $\frac{1}{2}$  grain in 100 Cc. salt solution), should be slowly given, and the blood-pressure should be carefully observed during the injection.—(*Arch. Int. Med.*, No. 3, 1916.)

#### Garlic in Whooping Cough.

T. M. Hovell recommends a simple remedy for whooping-cough. It consists of peeling the cloves of garlic, cutting them into thin slices, and wearing them under the soles of the feet between two pairs of socks, for if placed next the skin the pressure produced by walking is apt to cause irritation.

The garlic can usually be smelt in the breath within half an hour after the slices of garlic have begun to be worn, and the whoop and spasm usually disappear within forty-eight hours. The garlic should be worn for a week or ten days or longer, according to the severity of the case.

Garlic may also be administered by eating it as a form of bread sauce, made by chopping up the cloves when peeled, boiling them in milk, and mixing them with bread crumbs.—(*Brit. Med. Jour.*, July 1, 1916.)

## The Diagnostic Laboratory

Conducted by CHESTER T. STONE, M. D.,  
Brooklyn, N. Y.

### Resume of Tests Used in the Estimation of Stomach Contents.

1. *Free Hydrochloric Acid*.—To 5 or 10 c.c. of filtrate add 2 or 3 drops of Toepfer's solution as indicator. The filtrate turns red if HCl is present. Titrate from burette with decinormal sodium hydrate solution, shaking after each addition, until permanently yellow. Multiply by 20 or 10, respectively, from original reading of burette. The result equals free HCl. (normal 20-30). Phenolphthalein may be added and the total acidity computed, or as follows.

2. *Total Acidity*.—To 5 c.c. of filtrate add 2 or 3 drops of phenolphthalein as indicator. Color of filtrate is not changed. Titrate with decinormal sodium hydrate solution, shaking after each addition, until permanently red. Multiply by 20. Result equals total acidity (normal 50-60).

3. *Combined Hydrochloric Acid*.—To 5 c.c. of filtrate add 2 or 3 drops of alizarin solution as indicator. Filtrate turns brown. Titrate with decinormal sodium hydrate solution, shaking after each addition until permanent blue. Shows all but combined acid. Multiply by 20 and subtract from value obtained for total acidity. Result equals combined HCl. (normal 12-20).

4. *Propeptone*.—To the filtrate add equal volume of saturated solution of sodium chloride. Becomes turbid if propeptone is present. If not turbid, add 2 drops of acetic acid. Becomes turbid if propeptone is present.

5. *Peptone*.—To equal parts of filtrate and sodium chloride add 10 per cent. solution of sodium hydrate until clear; then overlay with one cubic centimeter of one per cent. copper sulphate. Purple or violet color indicates peptone (biuret reaction).

6. *Pepsin*.—If HCl is present add to half a test tube full of the filtrate a thin shaving of coagulated egg albumin. Place in incubator at 98° F. If pepsin is present the albumin dissolves in from 1 to 2 hours. If the filtrate contains no HCl add 2 or 3 drops of dilute HCl to acidulate.

7. *Rennin*.—To half a test tube full of milk add 6 to 10 drops of filtrate. Place in warm water (90° to 100° F.). The milk coagulates in from 10 to 15 minutes if rennin is present. If no coagulation test for:

8. *Zymogen*.—To the same milk add 5 drops of 1 per cent. calcium chloride. Coagulates in half an hour.

9. *Sugar*.—Boil some of the filtrate with Fehling's or Haine's solution of copper sulphate. Turns brick red if sugar is present.

10. *Starches*.—Place some filtrate in a porcelain dish; add a drop of Gram's solution. Turns blue, dextrin; turns purple, red erythro-dextrin; no change, achroodextrin.

11. *Lactic Acid*.—Add 1 drop of ferric chloride to 10 c.c. of 0.5 per cent. watery solution of carbolic acid. When 5 or 6 drops of filtrate are added to this reagent the solution turns canary yellow if lactic acid is present.

12. To 10 c.c. of the test meal add 5 c.c. each of glacial acetic acid and ether. Shake and add 2 to 3 drops of tincture of guaiac and overlay with ozonized (old) oil of turpentine. A blue color develops if blood is present.

13. (a) Dissolve a few granules of benzidin in 2 c.c. of glacial acetic acid and add 10 drops to 3 c.c. of 3 per cent. hydrogen peroxide. (b) Mix a small portion

of the test meal with 2 c.c. of water and boil. Add a few drops to (a). A greenish or bluish color appearing within a minute or two indicates blood in the absence of meat diet.

To obtain percentage. If 5 c.c. of filtrate are used, multiply by 20 if 10 c.c. multiply by 10. 1 c.c. of 1/10 normal sodium hydrate solution equals 0.00365 HCl.

**Potassium Bi-Tartarate.**—My experience with potassium bi-tartarate (cream of tartar) has been very satisfactory where the volume of urine has been lower than normal. With a patient, where the volume for twenty-four hours was less than eight ounces, after taking the preparation for four days, the volume increased to forty ounces. Many patients have enjoyed this drink during their convalescence. It is healthful and a good substitute for lemonade or phosphate. It may be sweetened if so desired.—Biggar, in *Cleveland Med. Jour.*

### Uranalysis.

**Niece Acetone Test.**—Ammonium nitrate 30.0 gm. Sodium nitroprusside 2.0 gm. Distilled water 80.0 c.c. To 5 c.c. of urine add from one-half to 1 c.c. of the reagent. Mix and overlay with about 3 c.c. of strong ammonia. A purple color develops in the presence of acetone.

**Test for Bile.**—In testing for bile pigment in blood and urine, Pakuscher and Gottmann use a 5 per cent. solution of iodine in ether. One c.c. of this reagent is added to 5 c.c. of urine and shaken. After separation, the lower layer (of urine) is colored green if bile is present, and this color becomes more accentuated if the urine is subsequently shaken several times with fresh ether. To apply this test to the serum, the albumin is first removed by shaking with alcohol (2 of serum to 3 of alcohol) and filtering. The filtrate is diluted with water, acidified with 25 per cent. HCl and tested with the ethereal solution of iodine as before.

### Bacteriology.

**Detection of Bacillus Coli in Water by Method of Precipitation.**—By M. Federolf (*Archiv. f. Hygiene*, 1909, Bd. LXX, P. 311; Ref., *Jour. Royal Inst. of Pub. Health*, March, 1910, p. 180).—Says Ficker introduced the precipitation as a method for the detection of typhoid bacilli in water, and it is by this method that comparatively good results are obtained as regards the isolation of typhoid bacilli from water. The author suggests the adoption of a method of precipitation for the detection of bacillus coli in the routine examination of water. The following was the method adopted in his experiments: 1 liter of water is rendered slightly alkaline by the addition of 4 c.c. of a 10 per cent. sterile solution of NaOH; 3.5 c.c. of a 10 per cent. sterile solution of ferric sulphate are then added and thoroughly mixed with the water. The flask containing the water is then placed in an ice chest for one hour. The precipitate which is formed after the addition of the ferric sulphate solution has by this time settled. The sediment is distributed into four centrifuge tubes and centrifugalized. When the supernatant fluid in each tube is poured off the sediment is dissolved by the addition of a sufficient quantity of a sterile 25 per cent. solution of tartarate of potash. The dissolved sediment is then plated out on Drigalski-Conradi or on Endo-Agar. The results obtained by this method were highly satisfactory. It was possible to detect even such a small number of B. coli as seven in one liter of water. With regard to the medium to be used for the plating out of the precipitate the author considers the Endo-Agar (fuchsin-lactose-agar) preferable to the Drigalski-Conradi agar (litmus-lactose-agar).

**What Research Work Has Done in Safeguarding Pregnant Women.**—Clifford Mitchell says: The de-

terminations of ammonia and urea in urine are a simple matter. To determine the ammonia, proceed as follows: Get a Schelbach buret with glass stop-cock, holding 25 c.c., a beaker and a stirring rod. 1.—Decinormal sodium hydroxide. 2.—Phenolphthalein indicator. 3.—Formalin, (half strength made by diluting formalin with equal parts of water). Measure 25 c.c. of urine, dilute with 50 c.c. water, add 4 drops phenolphthalein and run in from the buret filled with decinormal NaOH until a permanent pink remains on stirring. This indicates the so-called acidity of the urine. Then if 8 c.c. of NaOH were used, this shows in 100 c.c. of urine 32 c.c. necessary, which, clinically, we call an acidity of 32 degrees.

Next pour out 10 c.c. of the 20 per cent. formaldehyde solution, add a drop of phenolphthalein and neutralize by adding decinormal soda to the solution until a permanent pink appears. Then pour this mixture into the urine mixture. Decolorization results. Now run in the soda solution again until a permanent pink appears. The number of c.c. of decinormal soda used this last time multiplied by 0.0017 gives the ammonia in 25 c.c. of urine used, and this by 4, the percentage of ammonia approximately.

Askenstedt thinks the following all which is necessary; i. e., if the number of c.c. of soda needed to show the ammonia greatly exceeds the number needed to show the acidity, toxemia is present, since normally the two quantities are about the same.

Inasmuch, however, as the acidity is increased by diacetic acid sometimes present in the urine I think it proper for routine purposes to do both; i. e., first compare the acidity and the ammonia, and, second, the ammonia and the urea.

We get the urea by the Doremus method. In many cases of pregnancy so little urea is present and evolution of gas so slow we must allow the filled instrument to stand over night.

To determine the ratio divide the per cent. of urea by the per cent. of ammonia. If one finds a low ratio (below 15 to 1) and on repeating the determination discovers it to be persistent, make the patient withdraw from the social whirl, if she has not done so. Eliminate meat from the dietary. Use *merc. dulcis* and *podophyllum* until the stools are normal in color and the tongue and conjunctivae are clear.

If by these means the liver function improves and the urea-ammonia ratio improves until it is well above 15 to 1—the higher the better—if albumin, sugar and acetones are absent—labor in so far as toxemia is concerned—will not trouble you. But if the urine does not improve, trouble is inevitable. However, I feel fairly confident that convulsions can be averted provided these measures of treatment are undertaken as soon as you first find the low urea-ammonia ratio. Hence the desirability of getting at it early, especially in the case of primiparae in whom the toxemia may occur almost any time.

What is to me one of the most important results of our observations—if not the most—is the probability that we have solved the problem of the differential diagnosis between hepatic toxemia and uremia in pregnancy. For years the convulsions of pregnancy were deemed uremic and the kidneys held responsible solely. Now we know that the condition is usually primarily hepatic and secondarily renal. There is, however, a true primary renal disease which may develop during pregnancy. This condition usually appears late in the seventh or eighth month, as late even as the last week. The patient becomes dropsical, and passes urine which contains albumin in large quantity. The condition per-

sists until after delivery and convulsions are not common, but other complications, as heart failure, sepsis, etc., are more likely. True uremic convulsions in such cases sometimes do occur, but are more likely to be the results of exhaustion from protracted labor than to occur before labor pains. No woman who develops this renal trouble during pregnancy should risk becoming pregnant again, for in subsequent pregnancies the condition may recur, and by the time the third child is born chronic nephritis with persistent albuminuria and cardiovascular changes has fastened its grip upon the victim.

On the other hand, a primipara may recover from convulsions due primarily to hepatic toxemia, and go safely through subsequent pregnancies or at any rate never develop chronic nephritis.

Hence the value of the ammonia determination. If albumin appear following a large and persistent increase of ammonia, the case is an hepatic one in all probability; but if no marked increase has taken place in the ammonia prior to the appearance of the albumin, the case is likely to turn out to be a renal one. In the first instance the danger is in convulsions, and in the second, that of chronic Bright's disease following confinement. I have seen a number of women with enormous quantities of albumin in the urine in the seventh or eighth month, who all escaped convulsions. In none of these cases was the ammonia as much increased as in many cases where no albumin at all occurred.

I hope that these observations will be taken up by the profession and given thorough study. I should say before closing that all my cases occurred in private practice in American families. Whether the same conditions would obtain in hospital cases or among the poorer foreign element, I am unable to say; but judging from what Williams found in the Baltimore hospital I could expect the findings to be identical.

Let me emphasize, however, the prime importance of the proper collection and preservation of the twenty-four hour urine. Owing to vaginal discharges, the urine of pregnant women are far more susceptible to decomposition than when the patient is not pregnant, and if we are to do the work "right" we must have the urine "right."

—*The Specialist.*

#### Bacteriology.

##### Acne bacillus culture media (anaerobic).

Agar, 15.0; glycerine, 40.0; sodium acetate, 5.0; meat extract, 3.0; peptone, 10.0; water, 1000.0.

Neutralize to phenolphthalein, then add from 0.5 to 1.0 per cent. acetic acid, U. S. P.

#### Haematology.

**Easily Prepared Diluting Fluid for Counting Red Cells.**—James G. Callison (*J. A. M. A.*, April 4, 1914, p. 1086), suggests:

Loeffler's Alkaline Methylene Blue.....	1.0 c.c.
Liquor Formaldehyde .....	1.0 c.c.
Glycerin .....	10.0 c.c.
Ammonium Oxalate (neutral).....	1.0 gm.
Sodium Chloride .....	2.5 gm.
Distilled Water .....	90.0 c.c.

The various ingredients are added to the distilled water and allowed to stand till solution occurs. Filter. Gravity is 1.045. Preparation is permanent, easily prepared, and brings out the red cells in sharp relief. The red and white cells are also well differentiated.

**Sardou's Test for Blood in the Urine.**—C. S. Cumston (*Am. J. Urol.*, 1915, xi 364), says: The detection of blood in the urine by phenolphthalein has many practical applications in cases of mild hematuria or hemoglobinuria. Whenever the test for albumin in the urine is necessary, if it is in small amount, it is essential to

look for the presence of blood, which otherwise might give rise to erroneous conclusions as to the amount of albumin.

In these instances microscopical examination is insufficient because certain urines are directly toxic for, and have an osmotic action on, the red blood corpuscles, so that only the transudated hemaglobin can be recognized.

The slight hematuria in urine lithiasis or nephropathosis incident to physical exercise, likewise early tuberculosis and renal cancer, may be detected by the phenolphthalein test.

The technique of the test is as follows:

1. Meyer's phenolphthalein reagent, prepared as follows: Phenolphthalein, 2 gr.; potassium hydrox, 20 gr.; dissolved in distilled water, 100 gr.; to which is added impalpable powdered zinc, 10 gr. This is brought to the boiling point, when the mixture will be red, but progressively becomes decolorized from the reduction of the phenolphthalein into phenolphalin.

2. Acetic alcohol: acid acetic crystal, 2 c.cm. alcohol, 90 per cent., 98 c.c.

3. Peroxide of hydrogen at 12 volumes. Three c.c. of non-filtered urine, just made homogeneous by shaking, are poured into a test tube; then three c.c. of acetic alcohol are added. The tube is then shaken and one c.c. of Meyer's reagent is added and after again shaking, three drops of the oxygen water are added.

62 Pierrepont Street.

(To be Continued.)

### THE USE OF HOT IRRIGATIONS IN THERMAL TRAUMA.

Reading history, or studying ethnography, we feel amazed when we learn of cruelties among the ancients and barbarous peoples, but we overlook our own neglect in the routine treatment of extensive burns by dressings. In 1857 Passavant, of Frankfort a/M, established that the continuous warm water bath is to be considered the ideal remedy, not to be surpassed by any other method, in the treatment of extensive burns. On different occasions the late Achilles Rose furnished evidence that it was Passavant who first treated extensive burns by means of the continuous warm water bath and who described this method in an extensive and masterly way, although it has been named after Hebra, who practiced it first in the year 1861—four years after Passavant's publication.

Dr. Rose frequently expressed regret that this ideal treatment had not been generally adopted. The continuous warm water bath gives almost instantaneous and even complete relief from pain, which is most excruciating in cases of extensive burns.

It is the mildest method not requiring dressings. With the warm water the wound is constantly kept clean, and the water penetrates the burnt tissues, so that they remain moist and soft. Without this immersion the cuticle which has been destroyed allows exposed tissues to harden and form an impenetrable cover over the deeper parts. There is no accumulation of pus, no crusting of desiccating wound secretion, and, what is most essential, no dressing is required. The patient does not suffer the often painful procedure of a change of dressing.

The fundamental advantages of the continuous bath in cases of burns are those which we understand from its physiological action on circulation and innervation in general. The principle in using the continuous warm bath, not only in cases of burn, but also in erysipelas of

trunk or extremity, of articular rheumatism, of phymatiasis of bone and joints and other forms of phymatiasis, is to eliminate the products of inflammation and infection.

Baudelocque, an obstetrician of Napoleon's time, made use of the warm bath in peritonitis. His method was revived by Noeggerath in the German Hospital of New York, but abandoned again after Noeggerath's departure. Interesting is it also that Paulus, of Aegina, who lived in the seventh century under the reign of the Byzantine Emperor, had certain patients operated on for hernia submersed in warm water for seven days. All the early advocates of the continuous bath, beginning with Paulus of Aegina, practiced antiseptic principles, although they did not call their procedures by that name.

Those who have had experience with it find that the warm bath is still a most reliable means of applying antiseptic principles in cases of extensive burn. Not only can it be well carried out in every hospital, but it is of especial value in asylums for the treatment of insane, but in other tuberculosis institutions. Above all, however, it offers the greatest possibilities in the treatment of extensive burns.

### Health Insurance.

Compulsory health insurance will relieve nobody but the charity organizations. It is nothing but a miserable palliative for the evils of poverty. Wages may have gone up in the past few years, but the purchasing power of the dollar has fallen, and the working man is no better off than he was twenty years ago. This is evident to anyone who will examine Chapin's Standard of Living, or Scott Nearing's work on wages, or the statistics of the United States Bureau of Labor. A working man's family of normal size can have no surplus worth talking about at the end of any year, if indeed it can make ends meet after living decently.

Compulsory social insurance ought to be abhorrent to a democracy anyway. It is wholly foreign to the genius of American life. From any point of view excepting that of our professional philanthropists (?) it is a deplorable measure.

If conditions in the world of labor were what they ought to be, such a hideous device as compulsory health insurance would be inconceivable. The passage of such legislation is indicative of the hopelessness of labor's plight.

The profession should decline to be used in the putting over of such schemes, and the workers should refuse to accept candy sticks in place of economic justice.

If our boasted altruism is anything but hypothetical, and if we have not reached an utterly cretinoid state, this kind of legislative "frightfulness" will be throttled beyond hope of resurrection.

### The Mosquito and Poliomyelitis.

Is poliomyelitis transmitted through the medium of the mosquito?

Certain phases of this disease resemble yellow fever, which is spread by the *stegomyia fasciata*.

Numerous instances in the present epidemic seem to point to the mosquito as the offender, and we earnestly commend this pest to the careful consideration of those research workers who are studying the disease. We trust we shall not need martyrs like Carroll, Lezeur and Agramonte, those heroic army surgeons who open the closed book of yellow fever, to demonstrate the real facts in connection with poliomyelitis.

## The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

### IMPORTANT DISCOVERIES IN MEDICINE.\*

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Considering the many years vast numbers of medical men have practiced the healing art, truly important discoveries have been comparatively few.

Numerous *minor* achievements have marked the advance of curative science, but the real epoch-making events stand out by reason of their rarity. The object of this paper is to briefly discuss the most important.

It is a curious fact, not exclusive to the medical profession, how the whispering of Nature, even the howling, passes by unheard or disbelieved. The great scientist lives with senses alert, ready to catch the Creator's slightest hint and develop something of inestimable value to mankind.

Again, we find credit for discoveries associated almost entirely with certain names, whereas the priority belongs to others.

I will not dwell upon the medicine of the ancients excepting to mention Hippocrates (460-357 B. C.), one of the two greatest physicians. This great Greek man of medicine was an originator. Skilled as a diagnostician, profound as a writer, broad as a therapist, his name will live for all time. His introduction of the science of prognosis was among the chief additions to the science of medicine. His maxim was: "In order to be able to prognosticate correctly who will recover and who will die, in whom the disease will be long, in whom short, one must know all the symptoms and must weigh their relative value."

Although Vesalius (1514-1564 A. D.) is called "the father of anatomy," dissection was practiced in the Museum of Alexandria, that great birthplace of science, about 300 B. C. Not only were dead bodies dissected but those of living criminals as well.

The demonstration of the circulation of the blood in 1616 by William Harvey is one of the truly important discoveries in medicine. The discovery of the valves in the veins by Sylvius and Fabricius and the partial discovery of the lesser circulation by Servetus only slightly paved the way for Harvey's great achievement. A practical worker and thinker, clear in his descriptions, accurate in his deductions, he gave to the medical world the results of his observations and conclusions. Much of his work consisted in actually observing the circulation on the lower animals with a single lens. The capillary vessels were first seen by Malpighi (who first demonstrated the air cells) with the aid of the newly invented microscope, four years after Harvey's death, and the link between the arteries and veins was absolutely proven. The existence of the capillaries was practically established by the reasoning of Harvey, the lack of the proper instrument preventing him from actual observation. Much could be written of the work leading to his conclusions, if space permitted. Time will never erase the fame of William Harvey.

The introduction of smallpox virus into the body for isopathic prophylactic reasons extends back into the remote past. It is mentioned in the Atharva Veda. The Vedas were written in 1500 B. C. (Sir W. Jones), or from 1400 to 1600 B. C. (Ritter). The four

Vedas represent the earliest religious and philosophical thoughts of India. Inoculation was performed by the Brahmins (the chief high priests). The pus used was taken from smallpox patients one year before. The pus of secondary inoculations was also used. The use therefore of an attenuated isopathic virus is by no means a modern idea.

"Pock-sowing," the introduction of cotton saturated with smallpox pus into the nares of children from three to six years of age, was practiced by the Chinese, 1000 B. C.

The Greeks of Constantinople, the Circassians, Arabians, Africans, Danes, Scots and others practiced inoculation at an early date.

The belief that cowpox was a prophylactic against smallpox was entertained by the farmers for centuries. In the seventeenth century the disreputable Barbara Palmer, Duchess of Cleveland, mistress to Charles II, replied to a jest by saying that she did not fear losing her beauty from smallpox because she had had cowpox. In 1774 Jesty of Dorsetshire successfully vaccinated his wife and two sons. In Holstein, 1791, Plett successfully vaccinated three children. A young girl who had come to Jenner for advice when he was a student at Sodbury replied to the mention of smallpox, "I cannot take that disease, for I have had cowpox." Later when Jenner mentioned the subject to Hunter he received this reply: "Do not think; but try; be patient; be accurate." Notwithstanding that the idea of the prophylactic power of vaccination was impressed upon Jenner's mind in 1780, no practical demonstration was made until May 14, 1796. He took the pus from the hand of Sarah Nelmes, a dairy maid suffering from cowpox, and inoculated an eight-year-old boy, James Phipps. July 1st he inoculated the boy with smallpox virus. *No disease developed.* The following is an extract from Jenner's report: "There is a disease to which the horse, from his state of domestication, is frequently subject. The farriers have called it the 'grease.' It is an inflammation and swelling in the heel, from which issues matter possessing properties of a very peculiar kind, which seems capable of generating a disease in the human body (after it has undergone the modification which I shall presently speak of), which bears so strong a resemblance to the smallpox that I think it highly probable it may be the source of the disease."

"In this dairy country a great number of cows are kept, and the office of milking is performed indiscriminately by men and maid servants. One of the former having been appointed to apply dressings to the heels of a horse affected with the 'grease,' and not paying due attention to cleanliness, incautiously bears his part in milking the cows, with some particles of the infectious matter adhering to his fingers. When this is the case it commonly happens that a disease is communicated to the cows, and from the cows to the dairymaids, which spreads through the farm until the most of the cattle and domestics feel its unpleasant consequences. This disease has obtained the name of 'cowpox.'"

From then on vaccination spread into extended use, and regardless of the fact that it has had and still has many enemies, its prophylactic effect upon smallpox cannot be doubted. It is a perfect example of "*Similia Similibus Curantur.*"

It is worthy to note that when the crude smallpox

\*Opening address read at the eighth annual meeting of the American Association of Clinical Research on Sept. 28, 1916, at New York.

virus was used as a prophylactic the results were not so favorable. The *isopathic* remedy, especially when crude, is a less potent agent than the *similar* one. The attenuated smallpox virus is of far more value than when undiluted. I have given variolinum, smallpox virus triturated with sugar of milk, in the 3d potency (1-1,000,000) every four hours, for a week or more during an epidemic to patients who refused to be vaccinated. Although incapable of absolute proof as to the prevention, these patients did not contract smallpox. Unvaccinated persons exposed to smallpox, who were taking Variolinum, have not contracted the disease. "G.M.H. (H.W., xxxii, 546) records this experience: Var. 6 (three pilules) was given to the mother and children of a family, one of whose members was taken with smallpox and removed to an isolation hospital, with his mother to nurse him. The patient (who did not receive Var.) was dangerously ill for a month. Neither the mother who nursed him nor any of the other children took smallpox. Vaccine was sent by the Government and all the family were vaccinated, but it did not take with any of those who had taken Var., although the vaccination was repeated. Moreover, G. M. H. himself who had taken a dose of var., submitted to vaccination, but "although four thorough inoculations were given, they healed up immediately, and did not even itch or smart."

Vaccinum, attenuated vaccine, and melandrinum, attenuated grease of the horse, are used like variolinum and with similar results.

One of the greatest discoveries in the world is that of anaesthesia; it has not only removed the horrible mental dread and physical torture of those needing operative measures, but it has made possible the wonderful modern surgical methods.

The attempt to discover a satisfactory remedy to abolish pain during operations dates back centuries. The Chinese produced partial anaesthesia with a remedy called *mago*; the Scythians inhaled the fumes of hempseed; hyoscyamus and opium were used in the middle ages. Mandragora was another remedy described by Pliny (A.D. 23-79). The practice of obtaining the anaesthetic properties of coca leaves was practiced by the "medicine men" of the tribes of South American Indians years before the introduction of cocaine. It consists of chewing coca leaves and expectorating the juice into the wounds while operating. That trephining was performed at an early date is proved from the evidence furnished by old skulls. At first stone, then steel instruments were used.

In 1798 the hint of the probable anaesthetic properties of nitrous oxide was given by Humphry Davy near the end of his essay, "Researches, Chemical and Philosophical, Chiefly Concerning Nitrous Oxide." "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place."

This wonderful suggestion, like many others, passed unheeded, and nitrous oxide was inhaled after lectures for amusement.

As early as 1818 this statement appeared in the "Journal of Science and the Arts." "When the vapor of ether mixed with common air is inhaled, it produces effects very similar to those occasioned by nitrous oxide." After describing the method of inhaling and the effects produced, this appears: "It is necessary to use caution in making experiments of this kind. By the imprudent inspiration of ether a gentleman was thrown

into a very lethargic state, which continued with occasional periods of intermission for more than thirty hours, and a great depression of spirits; for many days the pulse was so much lowered that considerable fears were entertained for his life."

This hint, ascribed to Faraday, passed by unheeded, again indicating the deafness of the medical profession to the whisperings of Nature.

Experimentation with ether was retarded by the fear of disastrous consequences. It was the custom to hold "ether-frolics" similar to those of nitrous oxide. This gas would be inhaled until the subjects would become merry, excited, or even insensible. In 1839 during one of these "frolics" Dr. Wilhite of Anderson, South Carolina, (then seventeen years of age), forced a negro boy to inhale ether. He became unconscious, remaining thus for an hour, when medical aid arrived and he recovered after slapping, shaking and cold splashing.

The "ether-frolics" were discontinued in that section after the experience with the colored boy.

In 1842 Wilhite became a pupil of Dr. Crauford Long, a practicing physician of Jefferson, Georgia. During the "ether-inhaling frolics" performed by him and his pupils Long learned that some of them, as well as he himself, were unconscious of blows received. Upon reflection, stimulated by Wilhite's account of the negro boy, Long determined to use ether as an anaesthetic in a surgical operation. *March, 1842, he painlessly dissected a tumor from the neck of a patient.* He removed another tumor from the same patient three months later. Three other patients were operated upon in 1842 and 1845. All these operations were painless. Unfortunately he did not publish the result of his operations, which were simply known in the vicinity. Long was therefore the real discoverer of anaesthesia.

In December, 1844, Dr. Horace Wells, a dentist, was present at a lecture on "laughing gas" delivered by Mr. Colton in Hartford, Conn. Wells, a man of enterprise, desired to find something to make the extraction of teeth painless. During the usual "fun" of inhaling the gas following the lecture, Wells was struck by the fact that one man was not cognizant of injuring his knees during a fall. After recovering from the effects of the gas, the man was sure that he had not felt the blow. Wells was convinced that he could draw teeth without pain. He decided to be the subject for the first trial. The following morning Colton administered the gas and Dr. Riggs extracted one of his largest teeth. After becoming conscious, he exclaimed: "A new era in tooth-pulling! It did not hurt me more than the prick of a pin. It is the greatest discovery ever made." After Wells's successful employment in his practice (Dr. Riggs also used the gas) he became desirous of testing it in a surgical operation. Dr. J. C. Warren of the Massachusetts General Hospital asked him to first demonstrate by pulling a tooth before the students in the amphitheatre of the college. Unfortunately the bag containing the gas was removed too soon and the patient cried out with pain when the tooth was extracted. This caused the students to hiss and hoot and his discovery was denounced. To reject a discovery without a full trial is a sign of the smallest and meanest of minds. No wonder the important discoveries in medicine have been few. Dr. Horace Wells must be given full credit for his great work.

While Long was waiting to test ether in a more pretentious operation, Dr. W. T. G. Morton, a Boston dentist, and Dr. Charles Jackson, a scientist, began a

series of experiments which has made an indelible mark on the history of medicine.

Morton was a rough and ready man, possessing no scientific knowledge, but of a most practical turn of mind. He possessed the idea that tooth pulling could be made painless, but entertained little faith in Wells's experience. Morton had been a pupil of Wells and during a talk with his preceptor was advised to ask Dr. Jackson to make him some nitrous oxide.

Jackson knew of the properties of ether, and had made himself unconscious with it in 1842. When Morton applied to him, September 30, 1846, he advised a trial of this gas and gave instructions for use. Morton inhaled the ether and was unconscious eight minutes. He then extracted the tooth of a patient without causing pain.

Desirous of testing ether in a long operation, he applied to Dr. J. C. Warren on the advice of Jackson. Warren gave his consent, and on October 16, 1846, Morton administered ether to a patient in the Massachusetts General Hospital while Warren removed a tumor from the neck. Although the patient felt hardly any pain he was conscious of the operation. Next day Dr. Hayward operated with entire success, insensibility being complete. Thus was the use of ether established.

Chloroform was introduced by Sir James Simpson in an endeavor to prevent the pains of childbirth.

Who should receive the credit of the discovery of anaesthesia has been a mooted question. Long and Wells hold the priority, while Morton and Jackson did the most in the way of development. Simpson should also receive his just due for the introduction of chloroform.

It is a sad but a noteworthy fact that we do not possess to this day an absolutely satisfactory anaesthetic for childbirth. The use of hyoscin or scopolamin—morphine narcois, familiar to our American obstetricians and used by them some years back, appeared under the fantastic name of "twilight-sleep." The results have proved unsatisfactory and it is falling out of use. The Johns Hopkins Hospital recently discontinued it on account of danger. The oxygen and nitrous oxide method, where the patient is constantly kept under the anaesthetic, is far superior. Its great drawback lies in the fact that the anaesthetist must be present continually, a difficult attainment, especially in country practice. Great will be the man who discovers a safe, sure and easily applied anaesthetic for obstetrical cases.

The world owes to Louis Pasteur the deepest gratitude for his great scientific accomplishments. Many of these had no relation to medicine. That which he has added to medical science is of inestimable value.

The discovery of microscopic organisms as the cause of fermentation, the saving of the French silk industry by proving the germ origin of the silk worm disease, the work with anthrax, and the isopathic cure for hydrophobia are Pasteur's most important additions direct or indirect to medical science.

Although the bacillus anthracis was first described by Rayer and Davaine in 1850 and its life history developed by Koch, Pasteur made independent confirmations and advanced far beyond. He found that birds were immune from the disease and concluded that it was due to their high temperature ( $41^{\circ}$ - $42^{\circ}$  C.). The anthrax bacillus inhibited in growth at  $44^{\circ}$  C. He made the following experiment to prove his theory. A fowl was chilled to  $37^{\circ}$  or  $38^{\circ}$  C. and inoculated with anthrax. Death resulted in twenty-four hours. The second experiment consisted in inoculating a chilled fowl and then raising its temperature by wrapping it in wool

and placing it in a chamber at  $45^{\circ}$  C. This fowl did not die.

The experiments with fowl-cholera are of interest because they show the advance of Pasteur's great work. He produced an attenuated virus by exposing the culture to air and successfully prophylactically inoculated the fowl. He next produced an attenuated anthrax virus by cultivating the bacilli exposed to air at  $42^{\circ}$ - $43^{\circ}$  C. His experiment on sixty sheep and ten cows proved its prophylactic power. Ten sheep received no treatment, twenty-five were first inoculated with the attenuated virus and later with undiluted anthrax bacilli. The remaining twenty-five were not vaccinated but were inoculated with the undiluted bacilli. Practically all the unvaccinated sheep died. The unvaccinated cows who were afterwards inoculated with anthrax had fever and would not eat, while the vaccinated ones showed no symptoms.

Pasteur proved that where infected animals were buried, earth-worms brought the anthrax bacilli to the surface in their castings, and recommended interring such in sandy soil where earth-worms did not exist, and not in places intended for forage or pasture.

Pasteur's most important contribution to the science of medicine was his familiar treatment for hydrophobia, consisting of successive injections of increasing strengths of broth containing material from the spinal cords of infected rabbits.

The idea of isopathy did not originate with Pasteur, however. As we have seen, such a method dates back to the remote past and Xenocrates taught it in 400 B. C. Nor was he the modern originator. Dr. Lux introduced isopathy in 1823 and in 1833 Dr. Constantine Hering recommended the diluted saliva of a mad dog as a cure for hydrophobia. They taught that attenuated toxins formed in the body could cure the diseases which they produced. Burnet and Swan were also workers in this field.

There is no wish to detract from the great work of Pasteur, and no doubt he was not influenced by the priority of others. The fact remains though that Hering and Lux antedated his idea. Koch's discovery of the tubercular bacillus must be ranked with the important achievements of medicine. His introduction of tuberculin in 1890 was not original, nor did he obtain anything like the therapeutic results achieved by his predecessors. Swan antedated Koch, when he introduced tuberculinum and Burnett began his experiments with this remedy (under the name of Bacillinum) in 1885. These men produced results because they repeated their doses very infrequently, whereas Koch, whose therapeutic accomplishments were of minor importance, repeated the remedy too often, causing an overlapping in action which retarded the benefit otherwise obtainable.

The institution of the humane treatment of the insane is attributed to Philippe Pinel. In 1792 he removed the chains from the insane patients of the Bicêtre Hospital. The following fact, which probably had no bearing on the action of Pinel, shows that he was not the first. Earlier in the same year the humane treatment of the insane was introduced by Samuel Hahnemann in the hospital for the insane at Georgenthal. He said: "I never allow an insane person to be punished either by blows or any kind of corporal punishment, because there is no punishment where there is no responsibility, and because these sufferers deserve only pity and are always rendered worse by such rough treatment and never improved."

Dudgeon in his biography of Hahnemann says: "May

we not then justly claim for Hahnemann the honor of being the first who advocated and practiced the moral treatment of the insane? At all events, he may divide the honor with Pinel, for we find that towards the end of this same year, 1792, when Hahnemann was applying his principle of moral treatment to practice, Pinel made his first experiment of unchaining the maniacs of the Bicêtre."

The introduction of diphtheria antitoxin resulting from the activities of Behring, Roux and others is among the important achievements in medicine. The serum was first used in a Berlin hospital in 1893. Few will question its effect on diphtheria.

We must not forget Lord Lister and his antiseptic surgery from which developed the modern aseptic method.

All are not acquainted with the fact that the notorious Gilles de Rais, Marshall of France, claimed by some to be the original of "Bluebeard," performed some wonderful plastic surgery (if his account can be believed) early in the 15th century. Rais was a sadist of the most vicious and horrible character. The brutal murders of some 1,600 children and other crimes tardily resulted in his execution in 1440. It is his plastic surgical work, although brutal in its conception and execution, which interests us. For example, he minutely describes the removal of his wife's arm and grafting in its place that of a colored woman. Although she died some days later (from shock no doubt) he claimed that she was able to move the arm and if she had taken the treatment which he had offered would probably have recovered with full functional power of the limb.

The horrible experiments of this monster show that the possibility of grafting operations is not a modern idea.

Dr. Alexis Carrel has done wonderful work along this line and there is no telling what may yet be accomplished.

We now come to the story of the porcelain painter's son.

So far we have not spoken of the discovery of any system of medicinal therapeutics, because during the centuries of medical history only one system has appeared worthy of our scientific consideration. Unfortunately, like all great discoveries, the opposition of the slow-accepting medical mind has held back a therapeutic method of the greatest possible benefit to mankind. Harvey was opposed, Jenner was ridiculed, even to the claiming that those who were vaccinated would turn into members of the bovine species. Wells was hooted and hissed, Pasteur met with much opposition, and so with nearly all other great advancers in knowledge. Hahnemann proved no exception to the rule. Much of the antagonism which he met with was due to mercenary reasons instigated by the druggists who objected to his dispensing his own remedies. The physicians who fought him were like pygmies in the hands of a giant, and he drew many keen intellects within his fold. It was due to opposition that a separate school sprang into existence, if the general medical mind had been more alert to grasp a great truth and less antagonistic, no division would have taken place.

The idea that likes could be cured by likes did not originate with Hahnemann, but it was he who put this system upon a sound foundation. Before his time it had no concrete existence. The first mention was made by the poet Athenaeus about 404 B. C. Hippocrates gave examples of homoeopathic cures in his "On the Places in Man," Paracelsus, Shakespeare, Milton and others all had the same abstract idea.

Hahnemann was translating Cullen's *Materia Medica* in 1790 when the imperfect account of the action of cinchona bark, considered specific for ague, arrested his attention. He determined to learn its action upon himself, a healthy human body. It must be remembered that he had no thought of homoeopathy when he made this experiment. After taking a large dose of the tincture he discovered that the symptoms produced were similar to the cases of ague it was curing.

Now I wish to make the following most emphatic. *Hahnemann did not jump at any conclusions and immediately publish the result of his first experiment.* He studied the records of cases of cures by single remedies; collected poisoning records and applied this knowledge to therapeutics; made experiments upon himself and others; tested remedies which experience proved to be curative in certain diseases. Thus he labored for six years before publishing his first article, which appeared in Hufeland's *Journal* in 1796, entitled "A New Principle for Ascertaining the Curative Powers of Drugs."

It was not until 1810 when he published his great work, "The Organon of the Art of Healing," that he mentioned the word "Homoeopathy." These twenty years were spent in the most stupendous work that medical history can record, and the action of many drugs on the healthy human body was learned. These provings appear in his "*Materia Medica Pura*." His other important works are "Chronic Diseases" and "Lesser Writings." Hahnemann was a great author, the titles of his original writings and translations covering nearly thirty pages in Bradford's "Homoeopathic Bibliography." Not only was he one of the two greatest physicians, but his talents extended into many fields,—botany, chemistry and other sciences. He was also one of the greatest linguists of his time.

He introduced the only truly scientific method of learning the action of drugs for therapeutic uses: *developing their symptomatology by experiments upon the healthy human body.* The use of lower animals for such purposes is a very poor substitute. If we are to treat human beings by administering to them a drug capable of producing similar symptoms on the healthy human body, it necessarily follows that we must know its action on man and not on the lower animals.

All the arguments in favor of such a stand would require too much space. Here are a few: 1st—Subjective symptoms are of the greatest importance, these cannot be developed in animals. 2nd—The degree of susceptibility varies. 3rd—A remedy may act differently in lower animals than in the human species.

The experimental department of one of the large medical colleges discarded cactus because it did not act on a guinea pig's heart! Dr. Rubini and his wife proved cactus on the healthy human body in 1862. Marked symptoms were produced. Here are a few: "Sensation of constriction in the heart as if an iron hand prevented its normal movement;" "Palpitation of the heart, continuous day and night, worse from walking, and at night, when lying on left side;" "dull, heavy pain in the region of the heart, increased by pressure," etc. Difficult symptoms to produce in a guinea pig. The great characteristic of bryonia is the stitching pain aggravated from motion, or all symptoms aggravated from motion. A characteristic symptom of apis is stinging pain relieved by cold and aggravated by heat. The pains of arsenicum are burning in character and relieved by heat. Such examples could be repeated indefinitely. How in the name of all reason could these be learned from animal experimentation? Those who

have tried to build our symptomatology upon such have met with a quicksand foundation.

I do not wish to be misunderstood in regard to animal experimentation, however. It gave to the world the knowledge of the circulation of the blood, antitoxin, the Pasteur cure for hydrophobia, etc. It is in its relation to the system of symptom-similarity introduced by Hahnemann that it is to be condemned.

It may be of academic use in the way of instructing the student, to produce for his observation a congestion of the lung in a lower animal simulating pneumonia by a remedy such as bryonia. Its practical clinical value as an aid to prescribing is of the most meagre value. There is only one way, that taught by Samuel Hahnemann: *the knowledge of the action of drugs which are to be applied according to the system of symptom-similarity must be based upon experiments on the healthy human body.*

We have at present a vast symptomatology developed by numerous provings. From these have been developed characteristics of "pure gold" which enable us to distinguish one remedy from another.

It is a sad fact that many of our physicians do not devote sufficient study to materia medica. They cry for an easy way, a short cut. There is no short cut for the homoeopathic prescriber over the road of animal experimentation.

It is also a significant fact that in heavily-endowed institutions devoted to research, much animal experimentation goes on within, but scant therapeutic knowledge comes out.

Hahnemann found a true system of medicinal therapeutics.

What is the most important discovery of recent years? In my opinion it is this: Food experimentation conducted in certain colleges, where various diets were tried for limited periods, taught nothing; in fact, misled. The two great (though unconscious) food experiments in the history of the world furnish absolute proof regarding diet. These were the "Kronprinz Wilhelm" and the Madeira-Mamore Railway episodes. It was through the admirable work of one of the members of this society that their value was established. I refer to Mr. Alfred W. McCann, the dauntless pure food crusader. The diet of the sailors of the "Kronprinz Wilhelm" consisted of bountiful supplies of meat, canned vegetables, white bread, butter, cheese, refined sugar, etc. It was not until the 255th day at sea that the symptoms of profound malnutrition began to appear which later caused the raider to dodge the English fleet and make port with 110 sailors at the point of death. Mr. McCann was the only investigator visiting the ship who learned the true cause of the malady: acidosis, produced by food which had been deprived of its inorganic salts. He prescribed large quantities of food containing these vital elements: water in which fresh vegetables had been boiled, whole wheat bread, yolks of eggs, milk, etc. All but four recovered. The death of 4,000 men of the Madeira-Mamore Railway Company in building a track from Bolivia to Brazil resulted from demineralized food. Monkeys in the vicinity living on undenatured food were well and happy. Mr. McCann is accomplishing a wonderful work which is revolutionizing the food industry, and which should have unanimous support. The characteristic slow-accepting medical man is again in evidence, and I have yet to visit a hospital which provides the correct food. I know a hospital case of pellagra receiving white bread.

The truth is gradually coming above the medical horizon. The recent experiment of the Public Health Serv-

ice in two orphan asylums at Jackson, Miss., is a step in the right direction. Surgeon Joseph Goldberger and Assistant Surgeon C. H. Waring of the Public Health say in the bulletin: "The conclusion is drawn that pellagra may be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary." Our fellow member, Alfred W. McCann, wrote of the cause of pellagra some time ago. The cure of such cases is hastened by the proper use of medicinal substances, in addition to the correct diet, as I have had opportunity to observe.

I am of the firm belief that denatured food has much to do, either directly or indirectly, with the prevalence of anterior poliomyelitis. That it may be due to a micro-organism is no argument against the important etiology of demineralized diet. By proper resistance established and maintained by undenatured food the chances of infection would be greatly reduced. In our investigations do not let us be like the knight in search of the "Holy Grail." Truth may be at our very doorstep.

In this resumé of important discoveries, I do not pretend to have covered the entire subject, this would be impossible in such a paper. The invention of the ophthalmoscope by Helmholtz, the laryngoscope by Garcia, Auenbrugger's method of percussion, Laennec's method of auscultation, the invention of the microscope by Jan-sen, the discovery of the spirochaeta pallida by Schaudinn, etc., etc., etc., are important additions to medicine. Time presses, however, and I must close.

The object of this Society is the acquisition of truth, no matter from where or from whom it may originate. Unhampered by preconceived ideas, free from prejudice, without desire for personal glory, we stand in harmonious union possessing the single idea,—the advancement of medical and surgical knowledge.

It is the sincere wish of your humble President of 1916 that the future history of great discoveries in medicine will contain many names of members of the American Association of Clinical Research.

## Correspondence

### A Correction.

To the Editor of THE MEDICAL TIMES:

In his article describing a case of Subdeltoid Bursitis, in the August, 1916, issue of THE MEDICAL TIMES, Dr. William Francis Campbell says:

"W. M. Brickner (*Amer. Jour. Med. Sci.*, March, 1915) has shown that in obscure pain and functional disability of the shoulder joint, what has previously been ascribed to rheumatism, has a real pathologic identity in the form of calcareous deposits in the bursa, the result of toxic irritation, and that these cases can be cured by excision of the entire bursa. These old-time "rheumatic" shoulders should all be x-rayed and if the findings are positive the bursa should be excised."

Dr. Campbell misquotes me. I distinctly stated in my publication that the calcareous deposit, often associated with subdeltoid bursitis, is never in the bursa, but is always beneath the bursa, in or upon the supraspinatus tendon or, occasionally, the infraspinatus.

Nor did I say that the bursa should be excised. On the contrary, I distinctly stated that excision of the entire bursa cannot be performed without an unnecessarily extensive procedure and that it is quite unnecessary. The operation I perform in those cases that do not yield to non-operative treatment is of quite a different character, as described and illustrated in the article to which Dr. Campbell refers.

I said also that I do not believe the bursitis or the lime deposits are of toxic or of bacterial origin. They are, I said, of traumatic origin. In all probability some metabolic disturbance predisposes to the throwing down of lime in the bruised tendon.

WALTER M. BRICKNER, M.D.

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## "Spilling the Beans."

Dr. S. J. Meltzer, in his communication in the *New York Medical Journal* of August 19th making an appeal for a fair trial of his adrenaline treatment of poliomyelitis, remarks that "Those who are open minded will then see for themselves whether my views deserve scientific consideration and my suggestions an honest and unbiased trial." But in a communication in the same journal of September 2nd he throws his influence against a fair trial of Duncan's autotherapy in this disease, and goes so far as to say of another method (the subcutaneous injection of spinal fluid withdrawn from the patient) that it "ought to be prohibited by those in authority."

All three methods are in the experimental stage. At the present moment about all that one can say is that Meltzer's method is essentially palliative, unless it shall be shown that undesirable sequelae supervene after this treatment in the late stages of the disease, when vascular paresis and congestion might be expected to follow the initial constriction, in which case the early palliation would seem dearly bought, not to speak of other palpable drawbacks.

With respect to the doctor's remarkable suggestion that a form of therapy employed in good faith by able men be prohibited by those in authority, we think it a peculiarly significant expression. It may readily be imagined what progress medicine would have made in recent years had our therapy been Prussianized by some medical oligarchy in such a manner as would appear to be desirable to the doctor's mind. It is almost inconceivable that a man of Dr. Meltzer's peculiar institutional relationships should have "spilled the beans" in so frank, not to say indiscreet, a manner, unless it be that the time is almost at hand when Prussianization

is to be imposed upon us. One is especially tempted to think so if it be true that the Department of Health has prohibited in its hospitals the subcutaneous injection of spinal fluid at the behest of Dr. Meltzer. The doctor declares that such prohibition has gone forth but we are inclined to believe that the Department, awed by the Rockefeller Satrap, is only "pussy-footing" a bit. Like the horrific pronouncements of the Mexican Government, intended only for home consumption, the Department of Health has "scraps of paper" exclusively for the anesthesia of petulant scientists.

Dr. Meltzer has a second letter in the *New York Medical Journal* of September 2nd which seems to have been written in a sweeter state of mind, for he speaks of the entire impartiality of the Department of Health with regard to poliomyelitis therapy. It is impossible to reconcile the dignified tone of this communication and its scientific spirit with the other letter upon which we have commented, except upon the theory of double personality. Their juxtaposition in the journal affords opportunity for the study of a curious instance of this form of dissociation of the psyche.

Here the fearful thought occurs to us that there may be a third Dr. Meltzer—the one whose letters are published in the lay press before their appearance in professional journals. We refer to the opening lines of a news article in the *New York Times* of September 2nd, which ran as follows: "Dr. S. J. Meltzer of the Rockefeller Institute, writing in the number of the *New York Medical Journal* to be issued today, condemns the widely used treatment of infantile paralysis which consists of taking the spinal fluid from a patient and then injecting the fluid under the patient's skin, on the theory that the virus of the disease will stimulate the formation of antibodies in the blood."

We suppose that one of the three (?) Dr. Meltzers would wish to extend the prohibition against special therapy other than his own to the observation of final results, for if such comparative studies were to be continued it is quite possible that embarrassing and invidious data might be revealed.

## The Great Lesson of the Mobilization.

We have been patiently waiting until sufficient evidence had been collected from which to form an unbiased opinion with regard to the "true inwardness" of the hasty mobilization of the National Guard. It is not from the imperfect reports of press correspondents that such trustworthy evidence is to be obtained, since it is their business to pick up scraps of information where they can, regardless of the reliability of the source, especially that of a sensational character. We have discounted many of the lurid tales of hardship and neglect, bad food and insufficient medical care, knowing them to be grossly exaggerated. Only one who has watched the progress of the mobilization in armories and home-camps and has kept in close touch with affairs on the border from the *inside*, is in a position to note the defects in the system and the strenuous efforts that have been made to overcome them.

A comparison with conditions in 1898 is inevitable since in some respects the present are identical with those of the other war—summer. The season of the year, the sudden call, the wane of popular enthusiasm (or patriotism?), the temporary confusion of the War Department—all recalled vividly the outbreak of the Spanish War. Unlike the latter, however, the true cause of the sudden call to arms is so far unknown. We may learn some day whether it was a military ne-

cessity, an experiment in rapid mobilization or—a political move. The suspicion that the latter was the real cause is strong, but time will tell. The National Guard had carried its point, it was anxious to demonstrate its preparedness and to assume its place in the first line of defense and its opportunity came sooner than it had expected.

The General Staff had repeatedly warned the American people that a citizen-soldier could not be transformed into a regular merely by placing him under Federal control, that the *system* was rotten, though the *men* might be able and willing, but the lesson fell upon deaf ears. "On to Mexico!" was the universal slogan and our generous, high-spirited youth, as well as those who had grown gray in the service of the State, flocked to the armories expecting to be sent at once against the "Greasers."

It was a sight both inspiring and pathetic to witness the martial ardor of the bright young fellows and their absolute ignorance of the grueling work that lay before them. By this time they are quite disillusioned when they find that there is no chance of their fighting (if there ever *was* any), but that they have bound themselves, for an indefinite period of severe training under a tropical sun in midsummer, to the routine of camp-life under conditions unlike any that they have experienced before. They find, as so many other young men have found, that it is easier to enlist in the United States army than to get out of it again. To do them justice, they have accepted these conditions manfully and uncomplainingly, making sacrifices which are but dimly appreciated by professional soldiers. We don't wonder that those whose families are dependent upon their slender pay, as well as men with large business and professional interests at stake, are beginning to ask the question: "Why were we sent to Texas, and how long are we to be kept here?" Granted that these complaints are unsoldierly (and doubtless fomented by pestiferous press correspondents and the inevitable grumblers found in every organization), we must feel the deepest sympathy for those who have dropped the plough in the furrow and responded promptly to the call to arms.

The doubt as to the attitude of many employers, who, under the influence of the prevailing enthusiasm (or hysteria?), promised to continue the pay of their absent employees and to keep their places open, has added to the feeling of unrest among those who are so far from home. Free comments regarding the unpreparedness of the War Department, defective train service, want of equipment and superficial medical examination of recruit have been dinned into the ears of the public. A week at Camp Whitman convinced us that there was considerable truth in these criticisms. It has been an experiment and a costly one. What a howl there will be when the bill comes in for this summer picnic! But, let us thank the good Lord that it is a picnic and not a war, even a guerrilla one.

What would have happened to our unseasoned boys in the Mexican deserts, two hundred miles from the base, we shudder to contemplate. As it is, we need not worry about them. They are under the best hygienic conditions, are perfectly safe and will return home no longer "tin soldiers," but *trained* men. Morally and physically, with all their sacrifices, they will look back on their rough experience as one of the most valuable of their lives. Weaklings there must be who will succumb under the strain, but these ought never to have gone, and most of them went under protest from their

overworked medical officers, who were not allowed time for proper physical examinations.

Who are the men who have gone? The cream of our young men, the ones who were actuated by generous and patriotic motives, we say. This is not quite true. Thousands of "slackers," who are enjoying themselves at cabarets and roof gardens *ought* to be on the border, or at Plattsburg. Why don't they go? Because they are not *obliged* to do so. They have no qualms of conscience when they see their associates in khaki. No fair hand shakes the white feather in their faces. They thank their stars that they are "not d—d fools like the fellows in the Guard." One cannot appeal to their patriotism, because they do not know what it means. There is only one treatment for them—rich and poor, employer and employed—*make them serve*. What is the real lesson of the mobilization, of the unpreparedness—physical and material—of the National Guard of the slack recruiting now that the war fever has passed?

#### Universal Military Service!

H. C. COE.

#### Feminine Aptitudes.

Now that the rising tide of feminism is upon us, it is in order for us to point out, as medical men, the physiological peculiarities of women which bear upon vocational aptitudes. It is still proper to say that a woman's chief aptitude is for motherhood, but what we have in mind has more to do with vocational activities relating to economic independence and social competition with other human beings of both sexes.

What are some of the physiological peculiarities of women which may be viewed as relating to this question of aptitudes?

Summarizing briefly, these peculiarities are relatively greater resistance to disease, even in infancy, greater longevity, better tolerance of shock and hemorrhage, far better resistance to cold, and more marked ability to bear pain.

One would be apt to think of soldiering after reading the foregoing list of superior qualities noted in the weaker (?) sex. Well, in the Russian and Balkan armies are a number of well qualified woman soldiers. We have no doubt that at a pinch women would compare well with men in the military domain, to say the least.

We have been especially impressed by the superior ability of women to withstand cold. This may be readily verified by anyone at our bathing beaches. It is the explanation of the long distance swimming of so many young girls. Then it is matter of common observation in the winter time when we see so many women quite comfortable in their light *lingerie*, low shoes, flimsy gowns and exposed arms and necks. But assuming this special ability to be a fact, what vocational bearing has it? All sorts of out-door activities come to mind, from patrolling a police beat in winter to Arctic exploration. And when exposed to cold women would not feel the same need as men of alcoholically induced surface warmth.

It must be some physical quality which we have not specifically mentioned which makes women more desirable as workers than men in certain fields, in so far as their relative independence of alcohol is concerned. Woman must be less vulnerable than man to the factors producing in him the uncomfortable *cenesthesia* which he attempts to assuage through drink, with some immediate success but ultimate demoralization. Some may

say that it is a moral and not a physical quality which figures here. We don't think so. Woman is on all fours (pardon the phrase) with men morally. In England and elsewhere at the present time, when women have to such a great extent supplanted men in the industries, this independence of alcohol on their part has led employers to modify their views greatly with respect to women's comparative fitness as workers, for this independence alone discounts many defects.

The fact would appear to be that the very peculiarities which nature has so lavishly conferred upon women, in order that they may meet the special requirements of maternity, also qualify them better than we have permitted ourselves to think for many vocational activities on an equal par with men, and we shall also probably discover before long that for some vocations they are even better fitted than men. Of course, we are speaking now of purely physical qualifications. Women possess other than physical qualifications which in certain directions place them to the fore as compared to men.

Woman's disqualifications have been so over-emphasized that we can afford to concern ourselves about her points of superiority.

Medical men should be above traditional judgments born largely of brutish sex domination and our general social frightfulness.

#### The Price We Pay For Genius.

Just as nature in general is prodigal in wasting individuals for the development of a type, or species, so do we find much human wastage apparently for a similar purpose. One sometimes thinks of the insane and the defective as so many more or less wasted individuals in order that a few geniuses may be developed. Take away have a number of people unfitted to meet life—and one unfit to meet life comes pretty close to the definition of defective. The Brontë girls were brought up in a remote district of England in such a way that had they been thrown utterly upon the world, and had they lacked genius, dependency would have ensued which would have been ascribed to defectiveness. This is what is happening every day in the case of peculiar people who are not geniuses and who therefore reach the charity organization society office or some one of our many institutions when opportunity for parasitism fails.

The point is that genius derives from peculiar nervous stock. There is a large element of childlikeness in the great genius. No specific fact about genius is better established than this. It seems to be one of the reasons why the genius breaks down so often under the stress and strain of the world; in other words, the man has the nervous system of the child. But the childlikeness of the genius also relates to his psychology and his intellect. Think of that irresponsible child, Samuel Taylor Coleridge; think of the perfectly helpless but divine genius, Francis Thompson.

So what we call defective stock contributes our geniuses, who, but for their genius, would be apt to find their way to the asylum like their uninspired brothers and cousins.

Some one may say that the father of the Brontës was a clergyman, and that therefore the assumption of so-called poor stock does not hold in their case. The defective strain may have been on the mother's side, but have we not known clergymen whose failure to remain celibate and childless has been of doubtful moment?

There cannot be genius without associated familial defectiveness. This is equivalent to a law. Of course, we must know what we are talking about when we say

genius. If one is the sort of person who thinks of a Gladstone as a genius then he is disqualified as a contributor to the development of the writer's theme.

The drunken brother of the Brontës is a very significant person in the family group. Here was a grossly defective member of the immediate family.

We have chosen to speak of the Brontës merely because they typify social helplessness redeemed by genius.

Like the stock from which he is derived, the genius, at least before he becomes a successful genius (who is forgiven everything), finds it hard to adapt himself to his environment. Of course, after the attainment of success, society adapts itself to him. It is too bad that society cannot identify genius early and begin the adaptation without delay. Probably among institutional derelicts are not a few wrecked geniuses.

We are not advocating coddling and subsidizing of the genius, but only recognition and a square deal. Why are we so keen about classifying the feeble-minded and so regardless of the precious type in question?

To be sure, the genius is a *rara avis* and difficult to identify, and then there is the apparent resentment against the genius entertained by commonplace folks. Not only must the Messiah be rejected, but, if possible, crucified.

We have spoken of the difficulty that the genius is apt to have in adapting himself to his environment. How definitely this trait relates him to those predisposed to insanity!

We suppose that the complete triumph of eugenics (what a nightmare!) would put an end to the incidence of genius—and to further human progress.

If we can be optimistic enough to view our defectives as in part complementary to our geniuses, much cause for gloom is dissipated. In this sense, God is in his heaven and all's well with the world.

Are our views sound, or false as hell and as fatuous, without the fascination, of fairy lore?

#### German Diet and Cancer.

If it be true, as held by Bulkley and others, that cancer is due to deranged metabolism consequent upon the excessive consumption of foods of animal origin, such as meat, then the Governmental regulation of diet now being practised in Germany ought to show some effect upon the cancer incidence in that country. The war should permit us to draw some suggestive inferences, not only with respect to cancer, but various other diseases related to faulty diet.

It is still heresy to say much about the medical treatment of cancer, but we may talk about theories of origin. Even Lane and Mayo discuss the constitutional origin of this disease. Bulkley says that laboratory experiences have demonstrated, in a most remarkable manner, the controlling effect of diet on the development of inoculated cancer in mice and rats, the process being inhibited almost entirely through vegetable feedings. It appears to be a fact that among vegetarian aborigines cancer is not rife.

With its thorough system of vital statistics, Germany's great dietetic experiment should yield most important results.

The theory of "acidosis" is still incomplete. The modes of origin of "acetonuria" are complex, and are largely influenced by the amount of carbohydrate food assimilated.—(*Lancet*.)

Autogenous transplantation of bone is far more effective than transplantation from another patient or from an animal.

## Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

### Nature as Artist and Physician.

That Nature is always right, is an assertion, artistically, as untrue as it is one whose truth is universally taken for granted. Nature is very rarely right; to such an extent even, that it might almost be said that Nature is usually wrong; that is to say, the condition of things that shall bring about the perfection of harmony worthy a picture is rare, and not common at all.

This would seem, to even the most intelligent, a doctrine almost blasphemous. So incorporated with our education has the supposed aphorism become, that its being is held to be a part of our moral being, and the words themselves have, in our ear, the ring of religion. Still, seldom does Nature succeed in producing a picture.

The sun blazes, the wind blows from the east, the sky is bereft of cloud, and without, all is of iron. The windows of the Crystal Palace are seen from all points of London. The holiday-maker rejoices in the glorious day, and the painter turns aside to shut his eyes.

How little this is understood and how dutifully the casual in Nature is accepted as sublime may be gathered from the unlimited admiration daily produced by a very foolish sunset.

The dignity of the snow-capped mountain is lost in distinctness, but the joy of the tourist is to recognize the traveller on the top. The desire to see, for the sake of seeing, is, with the mass, alone the one to be gratified, hence the delight in detail.

And when the evening mist clothes the riverside with poetry, as with a veil, and the poor buildings lost themselves in the dim sky, and the tall chimneys become campanili, and the warehouses palaces in the night, and the whole city hangs in the heavens, and fairyland is before us—then the wayfarer hastens home; the workman and the cultured one, the wise man and the one of pleasure, cease to understand, as they have ceased to see, and Nature, who, for once, has sung in tune, sings her exquisite song to the artist alone, her son and her master—her son in that he loves her, her master in that he knows her.

To him her secrets are unfolded, to him her lessons have become gradually clear. \* \* \*

Through his brain, as through the last alembic, is distilled the refined essence of that thought which began with the gods, and which they left him to carry out.

Set apart by them to complete their works, he produces that wondrous thing called the masterpiece, which surpasses in perfection all that they have contrived in what is called Nature; and the gods stand by and marvel, and perceive how far away more beautiful is the Venus of Melos than was their own Eve.

Whistler sets forth the foregoing as his opinion of Nature as an artist in his well known book, "The Gentle Art of Making Enemies." It set us to thinking a bit about Nature as a physician. Is Nature greater as physician or as artist?

Nature is not always right as physician any more than as artist. She is a very great artist at times, and a marvellous physician at times—but not all the time. Whistler knew when she had failed as an artist. Do we not know when she fails as a physician? We realize it most acutely when a loved one receives poor attendance. Your boy or girl, to you the most precious being in the world, contracts tuberculosis. You watch the

rapid breaking down of pulmonary tissue with sadness, and the way the temperature behaves is a source of gloom. The dear young body fades and fades until one could hardly believe the child to be the same one who, not so long ago, possessed life and vivacity in excess. Why, you bitterly think, does not Nature repair the damage in the way you saw her do in the case of that tailor who never left his work, who did not always observe the rules that you laid down, whose food was not so good as your child's, and who lived in a tenement house? Alas! Nature is in one of her incompetent moods, like that when she refuses to paint a picture—that mood when, as Whistler says: "The sun blazes, the wind blows from the east, the sky is bereft of cloud, and without, all is of iron. The windows of the Crystal Palace are seen from all points of London. The holiday-maker rejoices in the glorious day, and the painter turns aside to shut his eyes."

Dr. Nature has done some workman-like jobs on some cases of poliomyelitis, but in others she has merited harsh judgment. Being the physician-in-chief in every case, she is responsible for the results. Since she is known to be wholly competent, if in the mood, we are entitled to cavil at her failures. It is perfectly true that she is sometimes grossly interfered with, in which case there is nothing to be said, but in many cases where every opportunity is afforded her and the assistant physicians do nothing to interfere with a good job, she fails ignominiously.

But when, in a competent mood, Dr. Nature heals your loved one that was sick, and when, paraphrasing Whistler, she has for once sung in tune, and exquisitely, and her therapeutic magic has been deftly applied, then the emaciated gnome that had been wrought by the demon of disease becomes transfigured, the bloom of health and the charm of personality are restored, and the home is a fairyland once again. Then to the physician himself her secrets are unfolded, to him her lessons have become gradually clear, and through his brain, as through the last alembic, is distilled the refined essence of that thought which began with the gods and which they left him to carry out. Set apart by them to complete their works, in his laboratories, too, are produced masterpieces; and the gods stand by and marvel, and perceive how much more of wizardry there is in the progeny of Jacques Loeb's artificially fertilized sea-urchins than there is in the parent echinoderm or its natural young.

### Syphilis in War Time.

At a meeting of the Paris Académie de Médecine (*Jour. de méd. et de chir. prat.*, May 10, 1916), Gaucher, chief physician to a number of hospitals of the regional camp of Paris, read a paper on syphilis in war time. His observations had convinced him that in France and in the other belligerent countries syphilis was much more prevalent than before the war. In a total number of 2,295 patients treated in his service at the Saint Louis Hospital from January 1 to July 31, 1914—that is to say, in the seven months immediately preceding the outbreak of hostilities—there were 276 cases of recent syphilis, or in round numbers 300 in 3,000. From August 14, 1914, to December 31, 1915, he admitted to the same service 4,912 patients, civilians and soldiers, of whom 793 were cases of recent syphilis, or in round numbers 800 in 5,000. The prevalence of the disease had, therefore, increased by nearly one-half since mobilization.

The proportion of cases among soldiers and civilians was about equal, and the increase in numbers about the same in both classes. Many more chancres were seen in quite young people and in elderly men, and it would seem that those unfit for military service had, in regard to the contraction of syphilis, taken the place of men on active service. According to Vaillard, general inspector of the sanitary service, the 1935, 1936 and 1937 classes were threatened with contamination from birth. Gaucher, feeling that much of the evil was due to ignorance, organized courses of popular lectures on syphilis and its prevention. (*Brit. Med. Jour.*, June 10, 1916.)

## Society Proceedings

### American Proctology Society.

The eighteenth annual meeting was held in Detroit, Mich., June 11 and 12. President T. Chittenden Hill, of Boston, presided. These officers were elected for the ensuing year: President, Alfred J. Zobel, San Francisco; vice-president, Granville S. Hanes, Louisville, Ky.; secretary-treasurer, Collier F. Martin, Philadelphia. Executive Council—T. Chittenden Hill, Boston; Alfred J. Zobel, San Francisco; Wm. M. Beach, Pittsburgh; Collier F. Martin, Philadelphia.

New York was chosen as the place of meeting for 1917.

The following were elected Associate Fellows: W. Oakley Hermance, Philadelphia; George B. Moreland, Pittsburgh.

In his presidential address T. Chittenden Hill, of Boston, called particular attention to the inadequate treatment that rectal fistula receives at the hands of the general surgeon. He claims that the general surgeon "has never taken the pains to learn the underlying principles of a fistula operation, nor has he the requisite skill, experience or inclination to carry out the necessary steps in the post-operative treatment of these cases to bring them to a successful conclusion."

While in London there are two hospitals devoted to the exclusive treatment of disease of the rectum, Hill feels that better results can be obtained by establishing special departments in our large general hospitals. He urged that proctologists be appointed to all general hospitals. The many advantages of staff association, consultations, etc., in which proctology touches on the work of men in other fields, would prove of mutual benefit.

Dr. Hill also presented a formal paper on "Prolapsus Ani in Adults." He said the theory is advanced that all cases of procidentia recti are the result of neglect or improper treatment of what was in the beginning a simple form of mucous membrane prolapse. Correction of the condition early may prevent serious infirmity later in life. He described at length an operation modified after that of the late Mr. Goodsall of London, in which he employs a multiple suture. He advises removing the excess of tissue distal to the ligature.

The operation is performed under local anesthesia and is advised for patients of all ages. It is particularly suitable for use in prolapse of the age.

The author claims that the operation is painless, short and easily performed. There is absence of hemorrhage and the end results are satisfactory.

W. H. Stauffer, of St. Louis, read a paper on "The Post-Operative Treatment in Rectal Surgery," based upon a review of over 25,000 rectal cases treated, of which 1,500 were operative. Four hundred of these cases had been operated upon previously by approved method by other surgeons.

There are two reasons for these 400 secondary operations. First, not selecting the operation indicated by the pathology; second, improper post-operative attention.

In selecting an operation or treatment the following requirements must be met: First, Complete restoration of functions; second, time required for cure; third, pain produced.

Unsatisfactory results—complete or partial incontinence often are caused by needless traumatism. He does not believe in division. Division of nerves causes sensory disturbances.

Incontinence may be due to fistula operation. Believes that where the fistula opens more than two inches above the sphincter the two-step operation is indicated. In dealing with malignancy he mentions the operation of Evans as producing the least mutilation and disturbance of function in selected cases. Operations should only be performed after a definite diagnosis has been made.

Dr. C. F. Martin of Philadelphia drew attention to the value of photography for record and in teaching.

Discussing "Some Important Pathological Conditions About the Rectal Outlet," Granville S. Hanes, of Louisville, Ky., said tubercular ulcerations do not occur as frequently in the mucosa of the rectum and sigmoid as is generally believed. Amebic and various types of bacterial ulceration produce dysenteric symptoms that often lead to emaciation and exhaustion. Active tubercular ulceration is always accompanied by a decided increase in the temperature and pulse rate. These are not characteristics in other types of ulceration. In tubercular ulceration there is a history of constant and progressive symptoms while in amebic there is usually a history of improvement and relapses. Tubercular ulceration involving the rectum and sigmoid seldom yield to treatment.

Within the last two years Hanes has found cauterization with the high tension electric spark to be a most valuable means of treatment.

Tubercular abscesses often occur about the rectum when pa-

tients otherwise show no evidence of tuberculosis. The abscesses and subsequent fistulae are characteristic in that there is a great tendency to undermining of the skin. The external openings are, therefore, large with a livid appearance of the surrounding cutaneous structures. They point to impending trouble which may be precipitated months or years hence.

Fistulae of long standing with one or more very small external openings with a history of an extensive abscess are very difficult to cure. From external evidences they appear to be very simple. Usually the finger when introduced well into the rectum will be able to detect by careful palpation the hard indurated sinuses which often extend surprisingly high up by the rectum.

There are occasional fistulous tracts that extend up by the rectum to considerable heights and are very tortuous. It is difficult to follow these sinuses to their terminations when operating. When the wound heals and a small opening remains we may feel fairly certain that some part of the original fistula was not reached. It is then advisable to inject bismuth paste, which will often effect a cure.

J. Rawson Pennington of Chicago made a preliminary report on "The Anatomical and Bacteriological Findings of the Ano-rectal Region."

William M. Beach, of Pittsburgh, after reviewing the theories of Keith relative to nodal zones situated at different levels in the intestinal musculature, said that:

1. We have tried to define intestinal stasis to be a physiologic-anatomic disturbance of peristalsis by an inhibiting influence through nodal zones of the myenterium, located in the esophago-gastric junction, the duodeno-jejunal area, ileocaecal region and in the rectum. This demonstrated in the laboratory must be verified clinically.

2. Anatomic distortions, as kinks, adhesions, ptoses, etc., lead to stasis by disturbing the ganglia controlling peristalsis.

3. Hernia is a frequent manifestation of visceral displacement concomitant with stasis.

4. Long truss wearing with great pressure tends to rectal disease.

Alois B. Graham, of Indianapolis, read a paper on "Intestinal Symptoms Due to Achylia Gastrica."

In 5,758 patients presenting gastro-intestinal symptoms, and in every one of whom repeated gastric analyses were made, a diagnosis of achylia gastrica was made in 378. This is about 6.5 per cent, or a ratio of 1 to 5. One hundred were males and 278 females. The youngest was 17 years, the oldest 73 years. Sixty per cent. were between the ages of 40 and 60 years. In 90 per cent. the subjective symptoms were chiefly intestinal in character. The bowels were reported regular in 38, constipated in 112, loose in 142, and irregular in 86. Diarrhea was the most frequent symptom and was present in 37.5 per cent. of the cases. Description of three groups of cases. Description of the stools, which were at times quite characteristic. Rectal symptoms rarely reported. Internal hemorrhoids found in every case. Rectal examination of no value, except that of exclusion, in determining the cause of the intestinal symptoms. In cases where constipation was chief symptom, there was not anything of special interest.

There was no return of the gastric secretion in any of the cases. The course of achylia gastrica is a protracted one. Under proper therapy the prognosis, as to fairly good health, is excellent.

Diet alone in the severe cases of diarrhea was not successful. Astringents and intestinal irrigations were unsuccessful. Hydrochloric acid and pepsin in sufficient dosage is rational therapy and the only one which gave anything like satisfactory results. In some cases diet and hydrochloric acid failed. In these cases a nervous element was present as the administration of bromides in suitable dosage produced most excellent results.

Patients are comfortable as long as they continue treatment. If discontinued even for a brief period, there is a recurrence of the diarrhea. These patients should be correctly informed as to the prognosis; namely, that as long as there is evidence of an absence of the gastric secretion, just so long must they adhere to a rigid diet and take hydrochloric acid and pepsin.

Rollin H. Barnes, of St. Louis, considers fissure as an ulcer and believes that traumatic causes are not true etiological factors in the production of this trouble but that it is necessary that the tissues become inflamed and hence frail and easily torn in order that fissure be formed. He believes that catarrhal inflammatory conditions are frequently the result of an excessive carbohydrate diet and sometimes an excessive fat diet.

In the treatment of fissure he recommends palliative treatment by correcting the diet with reference to the excesses of carbohydrates and fats and placing the patient on a proteid diet for a time. When operation is necessary he believes that the object should be drainage rather than paralyzing the muscular fibers. He also advocates the use of a small enema

before defecation in order to avoid irritation from the stool. It is very important to keep the wound clean by hot sitz baths and the hot enema, in order that any foreign substance may not remain in the wound.

Malignant transformation of benign growths was the subject of Frank C. Yeomans, of New York.

The benign tumors of the colon and rectum considered were of the polypoid type—solitary polyp, multiple polyposis, multiple adenomata and villous tumor. All originate from the intestinal mucosa, are of the same histologic structure but differ in number, size, form and the relative amounts of glandular and fibrous tissue present.

Yeomans thinks these tumors inflammatory in character and note the frequent history of colitis or dysentery in these cases, intestinal parasites as causal in others and the positive evidence of the role of irritation as furnished by the therapy—colonic lavage, or colostomy and irrigation benefitting some patients and curing others. He reports a case of multiple adenomata in a man, aged 30, colostomized in 1913, with marked benefit. Many tumors have disappeared, the remainder have retrogressed and the patient is working regularly. There is no evidence of malignant change. Yeomans reports the transformation of a simple adenoma into an adenocarcinoma in a man, aged 76, who had rectal bleeding of 8 years duration, progressive constipation and a tumor that in recent years could not be reduced within the rectum. The tumor,  $3\frac{1}{2}$  by 2 inches, was attached just within the anal verge. It was removed under local anesthesia and both clinically and histologically was adenocarcinoma. Villous tumor or adenoma tends to recur in malignant form so should be extirpated early, thoroughly and radically. Multiple adenomata are the most important and serious type of benign growth of the intestine. Their usual site is the lower colon and rectum. Clinically they are malignant from diarrhoea, haemorrhage, etc., and if neglected over 40 per cent. become actually malignant. Improper local treatment, as snaring, curettage and cauterization is followed by malignant recurrence in a large proportion of cases.

E. H. Terrell, Richmond, presented a simple and efficient method of curing selected cases of hemorrhoids by the injection of quinin and urea solution. During the past two years 127 patients have been treated by this method with only one recognized failure. Injection of quinin and urea in solutions of from 5% to 20% strength produces starvation and atrophy of the hemorrhoids.

Louis J. Hirschman, of Detroit, presented a preliminary report of his work on the bacteriology of pruritus ani as based on the original work of Murray at Syracuse. The work of H. C. Ward, bacteriologist, in conjunction with Hirschman's work, shows that the streptococcus faecalis was present in the twenty-five cases, but the vaccine treatment in these cases, especially that of the autogenous vaccines, has resulted in important or systemic cure in but four cases, while the treatment of the surgical lesions present, or by dietary, or hygienic measures, has resulted in relief or cure of all the remaining cases.

Dwight H. Murray, of Syracuse, N. Y., read the sixth annual report of his original research work on pruritus ani and vulvae, adding reports of 25 cases to the former series of cases, making 123, the bacteriology of which shows 95% of the cases a streptococcal infection as the etiology for these troublesome conditions. He stated that his claim, that the streptococcus faecalis is the etiology of pruritus ani, is now confirmed by many leading physicians who have been investigating the subject.

He finds from the experience of this past year that far better results are obtained by the use of autogenous vaccines with more than 1,000,000,000 dead germs to 1 cc.

He stated that not one of the cases have had diabetes and, as a result of this, he questions very strongly whether diabetes is ever the cause of these conditions, unless as a complication.

He found further proof of one of the conclusions, in a former paper, i. e., where there is a rectal pathology with pruritus ani, plus a skin infection, that an operation for relief of these conditions will cure the rectal pathology, but will not cure the pruritus ani. If the streptococcal skin infection does not exist the operation will be very sure to cure pruritus ani. Murray is firmly convinced that operations for the cure of pruritus ani, such as Ball's operation and modifications of it, are absolutely contradicted and should never be performed.

S. S. Gaut, of New York, discussed ano-rectal injuries, such as those caused by external trauma, expulsion of hardened feces, and foreign bodies, swallowed or introduced through the anus, such wounds being contused, lacerated, incised or perforated. Laceration of one or all of the rectal coats results from careless examinations, introduction of imperfect syringe nozzles, bougies, proctoscopes, or other instruments. Perforating wounds are caused by bullets, knife thrusts, and pointed objects that have been swallowed, or introduced into the rectum, except when due to specific ulcers or cancer. The

injection of carbolic acid into hemorrhoids is responsible for extensive ano-rectal injuries.

The chief manifestations of superficial ano-rectal injuries are bleeding, sphincteralgia, frequent micturition, and painful defecation; symptoms that are exaggerated when wounds are extensive. Infected wounds are characterized by a chill, temperature, throbbing pain, swelling, and a thick yellow discharge. In extensive injuries of the upper rectum, hemorrhage is profuse. There is shock, the patient collapses, and soon exhibits symptoms of peritonitis when the peritoneum is involved.

The diagnosis of ano-rectal injuries is easy when the nature of the accident has been learned, the degree of hemorrhage, bruising and swelling have been noted, and the buttocks, anus, and rectum have been inspected, and digitally and proctoscopically examined.

Minor injuries take care of themselves, while extensive injuries may require simple or complicated treatment. Incised wounds are sutured under aseptic conditions. Contused, lacerated and pneumatic injuries are drained at one or more points following irrigation and the removal of ragged edges and necrotic tissue. Subsequently they are treated by drainage and topical applications, as fistula wounds. Injuries of the bladder and urethra are immediately closed when feasible, but if not the bladder is drained and the wounds here and in the rectum are permitted to heal by granulation. Small recto-vesical rents are sutured, but where the rectum or Sigmoid is extensively injured the bowel is resected, or an artificial anus is established.

Rectal and colonic disease in life insurance examinations was discussed by Alfred J. Zobel, of San Francisco. Life insurance companies evidently do not attach much importance to the condition of the rectum and colon, for they seem willing to assume that these organs are free from disease solely from the favorable answers given by the applicant to routine printed questions asked by the examiner. The average individual knows little about his ano-rectal region, and unless there is severe pain or itching, alarming bleeding, or annoying dysentery, he thinks it of little importance and unworthy the attention of either himself or the examiner.

The examiner should look out for those little fistulous tracts which cause no pain and discharge but little secretion, as they are frequently the primary manifestations of tuberculosis, and may appear in those who are otherwise apparently healthy. A severe stricture of the rectum may be present in a man outwardly perfectly healthy and insurable. In cases where a suspicious anemia is found to be due solely to bleeding from hemorrhoids, these individuals could be conserved to the life insurance business if put in the way of regaining their health so as to become insurable.

If a rectal examination is made, the condition of the genito-urinary organs in the male can be investigated at the same time, while in the female accurate information can be obtained about their pelvic organs without subjecting them to a vaginal examination. At the present time insurance companies do not demand an examination of the female generative organs, but accept their answers to the questions whether they ever had any uterine disorder and if pregnancy now exists.

Medical examiners should inquire carefully whether there is or has ever been a sanguinous, purulent or mucous discharge from the rectum. A history of chronic constipation or of diarrhoea should be considered worthy of further investigation.

Louis J. Krouse, of Cincinnati, said that spasmodic stricture of the rectum was often called phantom stricture on account of its imaginary existence. His conclusions were: First, that it is not a common affection. Second, that it is easily detected on digital examination. Third, that it often terminates in an annular fibrous stricture. Fourth, that it involves the lower Houston valve. Fifth, that a rectal ulcer is the most important etiological factor. Sixth, curing the ulcer in its early stage lessens the chances of the development of an annular fibrous stricture.

W. H. Axtell, of Bellingham, Wash., is convinced that those who acquire epilepsy after the fifteenth year are more amenable to successful treatment than when commencing earlier in life. Surgery can give but little relief except where there is a definite history of inflammatory adhesions holding the angulations and flexures—in fact, the condition of fecal stasis precludes surgery of the colon until the condition is first relieved, which, when so relieved, a prime factor in the production of the trouble is eliminated. A new and undescribed cause of the intestinal ptosis, which is so generally present in these cases, is the separation of the recti muscles, which are so essential to a thorough evacuation of the colon and for the support of the abdominal organs.

Donly C. Hawley, of Burlington, Vt., when using the pneu-

(Continued on p. 20.)

# "ROCHE"

To the Medical Profession:

New York 1916

We would consider as a favor information of any case in which a higher price than the one current before the war is being charged for Digalen, Thiocol Tablets, Thiocol Syrup or Pantopon Roche (Pantopium Hydrochloricum).

Even of the few "Roche" specialties which have been temporarily exhausted we have sold every package to the last at exactly the same price as that current before the war, trusting that by so doing we would maintain the good-will of the physicians in the products until they again become available.

We ask for your co-operation in carrying through our policy of opposing every attempt at speculation at the expense of physician and patient.

The Hoffmann-La Roche Chemical Works.

## MELLIN'S FOOD

In every step in the manufacture of Mellin's Food there is constantly in view the ultimate object of making a product of definite composition

**to Accomplish a Definite Purpose.**

This purpose is to furnish certain food elements which, when added to cow's milk, make it a suitable food for an infant. The food elements in Mellin's Food — carbohydrates (maltose and dextrins), proteins and salts — when dissolved in water and added to cow's milk so change the balance of nutrition in cow's milk that the resulting modification presents fat, proteins, carbohydrates and salts in the proportion needed

**for the Development of Infantile Life.**

The success of Mellin's Food, therefore, depends not upon any one of the food elements of which it is made up, but upon the definite composition of "Mellin's Food as a whole" as a means to enable the physician to modify cow's milk to meet the requirements of infant feeding

**in a Scientific, Rational and Efficient Manner.**

MELLIN'S FOOD COMPANY,

BOSTON, MASS.

(Continued from p. 324.)

matic sigmoidoscope places the patient in left lateral prone position with the left arm drawn out behind the back, the patient lying well over on left chest and stomach, the knees flexed, the right more than the left and placed above and well over and beyond the left on the table and with the back concaved as much as possible.

D. C. McKenney, of Buffalo, N. Y., reported an interesting case of tuberculosis of the anal skin, and Lewis H. Adler, Jr., of Philadelphia, gave a report of two cases of anal herpes zoster. William H. Kiger, of Los Angeles, Cal., reported six cases of pruritis ani treated by the vaccine method of Murray. Cultures were taken from the skin at the anal junction. In every instance streptococcus hemolyticus was found. No local application of any kind was used. The results are attributed to vaccine treatment alone. He suggests the use of autogenous vaccine only.

#### All Roads Will Lead to Battle Creek.

Names sometimes designate without adequately describing. Such is the case with the Battle Creek Sanitarium, which will celebrate the fiftieth anniversary of its founding on October 3, 4 and 5. This institution is a sanitarium, with all the most modern and scientific equipment for diagnosing and curing disease. But it is much more. From its inception it has been in the forefront of the movement for natural, rational and physiologic methods in the treatment of the sick. Primarily, indeed, its function has been educational—the teaching of right principles of living as not only aiding in curing sickness, but preventing its return as well. The sanitarium, therefore, has taken an active and a leading part in movements for public sanitation, for diet reform, to curb the liquor evil, to check tuberculosis, to abolish child labor and more especially to study tendencies toward race degeneracy and to point out eugenic and other remedies for them.

Being purely a charity and having no dividends to pay to stockholders, it has been able in the half century of its existence to spend over \$1,400,000 for the care of the indigent sick.

The program for the celebration includes a huge banquet, receptions, a big outdoor spectacle, a street pageant, with historical and allegorical floats, a race betterment exhibit, conferences on child labor, eugenics, tuberculosis and other sociolog-

ical and medical problems of the day, with numerous speakers of prominence, and a Health Chautauqua.

All physicians are invited to come.

#### Brief for Health Insurance.

A death rate for American wage earners twice that of professional men; the prevalence of high sickness rates; the need among workers of better medical care and of a systematic method of meeting the wage loss incident to sickness; and the necessity for more active work in the prevention of disease are the corner stones of the case for compulsory health insurance presented in the brief just published in New York by the American Association for Labor Legislation. This situation, it is pointed out, cannot be met fully by existing agencies, and can only be properly remedied by a system of health insurance embracing all wage-earners and dividing the cost among employee, employer and the state.

The great amount of sickness in the homes of the poor causes an average loss by each wage-earner of 9 days a year, and involves annually a national wage loss of approximately \$500,000,000. Notwithstanding the greater prevalence of tuberculosis among wage-earners, their early susceptibility to the degenerative diseases of middle life, and the excessive death rate among the industrial population, workers often are unable to secure the medical attention they require. In Rochester, New York, it was found that 39 per cent. of the sickness cases were not under a doctor's supervision; in a city like Boston, Massachusetts, one-fourth of the population, it is estimated, are unable to pay the fees of a private physician.

The lowered vitality and the poverty created by present-day conditions, it is claimed, can only be checked by a system of health insurance, which for a small sum divided among employer, worker and state, will bring medical care to the wage-earner and his family, will assure for a maximum of 26 weeks in a year a weekly payment of two-thirds of wages during the bread-winner's illness and in addition a small funeral benefit should he die. "Compulsory health insurance," concludes the brief, "is an economical means of providing adequately for the sick wage-earner, and will prove a mighty force for the inauguration of a comprehensive campaign for health conservation."

## That old fetid ulcer

that has thus far refused to heal, MAY heal up if you increase the coagulability of the patient's blood; some do, you know.

## "Elixir Chloro-Calcium S & D"

in 3-fldrm. doses, well diluted, t.i.d., preferably an hour after meals, has worked wonders in some cases. It soon killed the odor and the healing started from the edges. It may do as well in the case you are now treating. Your druggist buys it only in pts. and 5-pts. Interesting clinical reports are yours for the asking.

**SHARP & DOHME**—Baltimore, Md.

Sole makers of "Elixir Chloro-Calcium" and many other  
"Quality Products"

## A Powerful Nutritive Tonic

The great progress that has been made in scientific knowledge concerning bodily nutrition—and physiologic chemistry in general—has emphasized the great importance of certain enzymes and nutrients in maintaining nutritional processes at their highest efficiency.

Especially has attention been directed to diastasic ferments and carbohydrates, for it is increasingly evident that these play a very prominent part in a large proportion of nutritional derangements.

As facts have accumulated, and the notable efficacy of diastase and carefully selected carbohydrates in the management of many forms of malnutrition has been conclusively demonstrated, the use of malt extract has rapidly extended.

The need for malt extract of the highest quality and diastasic efficiency has very naturally led many physicians to turn to

### **TROMMER** **DIASTASIC MALT EXTRACT**

Honestly made from the best barley malt, for nearly half a century this pioneer extract of malt has been widely and successfully employed by careful, discriminating physicians who have recognized its remarkable tonic and reconstructive properties. Exceptionally rich in natural diastase, maltose and other nutrient extractives, it has been used with conspicuous benefits in **malnutrition, diabetes, incipient tuberculosis as a substitute for cod liver oil, in infant feeding and in all forms of bodily decline where carbohydrate metabolism is defective or impaired.**

In starch indigestion Trommer Extract of Malt, through its influence on the digestive functions, can be relied upon to produce substantial and lasting results. To countless physicians, therefore, Trommer Extract of Malt is not only the ideal corrective of starch indigestion, but also the most dependable and satisfactory nutritive tonic and reconstructive at their command.

*Useful and interesting literature on request*

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## LISTERINE

the well-proven and time-tried antiseptic solution, has been prescribed by the Medical Profession with very satisfactory results for 35 years in the treatment of Respiratory Diseases incident to Fall and Winter climatic conditions.

## LISTERINE

one part, hot water three parts, is a useful gargle for sore throat. In mucous catarrhs, Listerine, suitably diluted, is most effectively applied by means of the spray apparatus or douche.

## LISTERINE

is not only a vehicle for specially indicated alteratives, resolvents and astringents, but is itself an efficient, non-irritating antiseptic that is safe, pleasing to the taste and promptly effective.

A treatise on Respiratory Diseases will be forwarded members of the medical profession on request.

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TWENTY-FIRST AND LOCUST STREETS, ST. LOUIS, MO.

### Influenza Serobacterin Mulford for Immunization Against "Colds."

The usual method of treating acute and chronic respiratory catarrh ("common colds") has proven unsatisfactory chiefly because it has not been generally realized that the disturbance is due to bacterial infection.

The respiratory passages are constantly exposed to inroads of bacteria. When the functions of the mucous membrane are in a weakened condition, the bacteria rapidly increases and cause the well-known annoying and persistent chronic cold. Exposure to dampness, drafts, etc., also causes vasomotor disturbances which inhibit the protective functions and an attack of acute respiratory catarrh frequently results.

Spontaneous recovery is due to the formation of specific antibodies which overcome the bacteria. Treatment, therefore, should be based upon the principle of heightened immunity. This is readily induced by the intelligent use of an appropriate bacterin.

*Influenza Serobacterin Mixed Mulford*—a combination of killed sensitized bacteria secured from a large number of cases of respiratory catarrh of various types—is useful in catarrhal conditions of the respiratory tract, both for treatment and prevention. It may be used either before a cold is fully developed, to abort it; during the height of a cold, to hasten recovery; or between attacks, for prevention.

The usual method of administering Serobacterins is to employ the four-syringe package when beginning treatment. From 1-5 to entire contents of Syringe A represents the usual initial dose, and is followed by B, C and D at intervals of 24 to 48 hours. When it is desired to again increase the patient's immunity, Syringe D may be administered (D-strength syringes are supplied separately for this purpose). In acute cases it is advisable to start with smaller doses.

*Influenza Serobacterin Mixed Mulford* is a refined product superior to the regular Bacterial Vaccines. It is very rapid in action, usually producing its immunizing effect in 24 to 72 hours.

Send for Educational Bulletin No. 2 entitled "The Bacteriology of Catarrh and Common Colds."

### Five Sectional Conferences on Tuberculosis.

Sectional conferences on tuberculosis will be held during the month of October under the auspices of The National Association for the Study and Prevention of Tuberculosis.

The Louisville conference, which will comprise the Mississippi Valley States, will meet first on October 4, 5 and 6. The New England Conference at New Haven will meet on October 12 and 13; the Albuquerque Conference, taking in the Southwestern States, on October 13 and 14; the North Atlantic States Conference at Newark on October 20 and 21, and the Conference for the Southern States at Jackson on October 30 and 31.

The governors of every State in the territory of each of these conferences will appoint delegates, and the mayors of practically all of the principal cities will send representatives. The programs of each conference will be suited to the locality in which the conference is held. Speakers of national prominence will be present at these meetings.

### Overcoming Hepatic Engorgement.

Active stimulation of the liver is often urgently needed in certain diseases—notably those of an auto-toxic nature, or characterized by faulty elimination—but not infrequently the efficiency of the remedy used is modified, or completely nullified, by the catharsis incidentally produced. In Chionia, a preparation of Chionanthus Virginica, the practitioner has a chologogue that can be relied upon to increase the functional activity of the liver to a marked degree, without unduly stimulating the bowels.

Chionia is valuable, therefore, for relieving hepatic engorgement, overcoming biliousness and promoting free elimination of the biliary products.

### The Commonest of Human Ills.

Probably the commonest ill of modern mankind are gastric insufficiency, peptic deficiency and aepsia. Recognition of the true state of affairs leaves the physician but one course to follow—activation of the glands of the stomach. Bitter tonics, dilute acids and remedies galore have been used with varying degrees of success, but the remedy that has proven most uniformly satisfactory in restoring functional activity of the gastric glands is Seng. This is a trustworthy tonic to the stomach, a true secretant, that may be relied upon to restore the physiologic activity of the glands and thus overcome the distress and discomfort that make the gastric patient's life so miserable and burdensome. Write for a sample to Sultan Drug Co., St. Louis, Mo.

### Half a Century's Progress.

October, 1916, points an epoch in the history of Parke, Davis & Co. The house was founded in 1866—just fifty years ago this month—largely upon the optimism of three or four determined men, backed by a capital that would seem insignificant to-day. There was nothing in its unpretentious origin to foretell the success of after-years. And by success we mean not merely material prosperity, but also that broader and more enduring success that is based upon good-will and confidence.

Manufacturing pharmacy was then a crude, imperfect art. Bacteriology, pharmacology and biological pharmacy were as yet unborn. There were no curative sera or vaccines in those days. Prophylaxis was in its infancy. Standardization was unknown.

Fifty years have wrought marvelous changes in means and methods for the treatment of human ills. The materia medica has been amplified beyond the dreams of the earlier investigators. Knowledge of pathology has immensely broadened. The empiricism of the past has given way to rational therapeutics, and medicine is taking its rightful place among the sciences.

In all these forward movements Parke, Davis & Co. have had some part—notably as discoverers of new vegetable drugs, as inventors of new chemical compounds, as pathfinders and producers in the field of biological manufacture, as investigators in original research, as pioneers in both chemical and physiological standardization.

The past half-century, as we have intimated, has been remarkable in its contributions to the newer materia medica. What will the next fifty years bring forward? Time alone can write the answer. Ours is a progressive age. The science of medicine has not reached its highest development. The physician's armamentarium will be further enlarged and fortified. New remedial agents will come into being. Many existing products will be improved. And with the fulfillment of these conditions, Parke, Davis & Co. (if we may judge the future by the past) are certain to be identified.

### Nephritis.

The study of the etiology of chronic nephritis and of the efficiency of the phenolsulphonethalein test made from the records of the Southern Pacific Hospital by P. K. Brown and W. T. Cummins, San Francisco, appears in the *Journal*. The cases were divided into two groups—those with blood pressure apart from any other known cause above the maximum normal under hospital conditions of rest and diet, and those in which it was normal or below. Each group was studied in reference to entrance diagnosis, complications, age, occupation, use of alcohol and previous infections, and these sub-divided again into the more serious infections and another group comprising all others. The cases with the blood pressure above 180 were separated from the cases with the high blood pressure, and as it was not possible to distinguish in all high blood pressure cases between chronic and interstitial nephritis and arteriosclerotic kidney, they were all put together under the former head. The table given shows that the diagnosis of nephritis is practically a laboratory diagnosis and that it exists as a complication revealed by some other disorder causing the patient's hospital treatment.

The second important thing is that the etiologic significance of infections, hard work and alcohol has a very similar relation to the group in which albumin and casts were accompanied by low blood pressure and to the group accompanied by high blood pressure. The chief difference is that in the high blood pressure cases three-fourths were over forty years of age, whereas in the normal or low blood pressure cases less than one-third were over forty. In other words, the occurrences of marked structural change in the kidney has a distinct relation to age. A tabulation of the cases was made also to show the incidence of alcohol, venereal infections and other serious infections, and it shows that certain infectious diseases, notably the venereal and scarlet fever groups, were from 20 to 300 per cent. commoner in the early history of chronic nephritic cases than in others. A previous history of some diseases other than the common children's disorders was about twice as common in nephritics. The frequency of venereal disease was 86 in 258 cases, while only 45 among the controls had had venereal disease. It also seems reasonable to suppose that the kidney infected after scarlet fever is less resistant to later attacks as indicated in these statistics. As regards occupation, out of the 40,000 employees of the company, the engineers and firemen and the sedentary office force seemed to furnish a larger proportion of nephritis admissions than other employees. As regards the tests of kidney functions, Brown and Cummins find the phenolsulphonethalein test the best, as paralleling the clinical symptoms and a better indicator of kidney excretion than others used.—(J. A. M. A.)